



## **I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS**

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Área do trabalho: Ambiência

### **Qualitative and ecological evaluation of coconut fiber and materials traditionally used as bedding for horses**

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In the stable equine breeding system, bedding is of fundamental importance to the welfare of the animals, both in terms of physical and mental comfort. However, at the end of its useful life, it is discarded and generates significant biomass. The objective was to compare the qualitative and ecological aspects of coconut fibre to different materials traditionally used as horse bedding: wood shavings, sugarcane bagasse, rice husks and sand. The particle size of the tested materials was determined using sieves of 19.00, 8.00, 5.60, 4.75, 4.00, 3.35, 2.80, 2.00, 1 mm and bottom. Surface decomposition analysis was carried out using little bags on the soil surface, in a completely randomized 4 x 3 design: Coconut fibre, shavings, sugarcane bagasse, rice husk with three replications each and repeated measurements in the time (7, 15, 30 and 60 days). The water retention capacity (WRC) and surface temperature (infrared thermography) of the samples were evaluated in an environment covered by ceramic tiles and masonry walls. Initially, the samples were dried in an oven at 105 °C for 24 hours and weighed. Sample of each material was inserted into hydrophobic nylon bags, immersed in a known volume of water at 0.5; 1, 2, 4, 6, 12 and 24 hours, then hung for 30 minutes to drain excess water and weighed to calculate the WRC coefficient. The design was completely randomized in a 5 x 3 factorial arrangement, with five treatments: coconut fibre, shavings, sugarcane bagasse, rice husk and sand with three replications each and sub-divided plots. The data were subjected to analysis of variance and compared to the Tukey test at 5% significance. For particle size, sugarcane bagasse presented 64.22% of its material above 5.6mm. The wood shavings had a concentration on sieves of 5.6, 1 and <1 mm. The rice husk had particles retained between 4mm and bottom. Coconut fibre had 65% of its material below 1 mm and 21% at 5.6 mm. The washed sand had particles below 1mm. Regarding decomposition, coconut fibre was the only material with a linear increasing effect up to 60 days, with the others having a decreasing quadratic effect, demonstrating degradation potential. In terms of water retention capacity, it was observed that at all times, coconut fibre was the material that presented the highest water retention values (283 to 374%, according to the increase in immersion time), followed by bagasse sugarcane, wood shavings, rice husks and sand. Analysing the surface temperature, at times 0, 0.5, 1 and 2 hours, wood shavings proved to be the material with the highest surface temperature value, followed by sugarcane bagasse, coconut fibre, rice husks and sand. The values varied between 18 and 27 °C. Coconut fibre is the material that best retains water, which is an important factor for containing equine urine in a stall, in addition to demonstrating a greater capacity for decomposition on the surface and temperature values within the thermoneutral zone for horses. Coconut fibre has the potential to be used as bedding for horses.

**Keywords: Decomposition, Infrared Thermography, Residue, Stable, Water Retention.**

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