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**The Gray Water Footprint of soybean in the areas surrounding the Tapajós National Forest, Brazilian Amazon**

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In the early twentieth century, the population totaled 17 million, according to estimates of the Brazilian Institute of Geography and Statistics - BIGS, in 2020 the population is expected to be 219 million, according to UN Country - UN in 2030 the population Brazil is expected to reach 232 million.

This growing population breakthrough limit the soil conditions for food production stimulating increasing the use of fertilizers. Brazil occupies the 4th place in the ranking of NPK consumers and 6th place in the consumption of nitrogenous fertilizers.

The aim of this study was to evaluate the Gray Water Footprint - WF<sub>gray</sub> by use of nitrogen fertilizer in soybeans. Was considered the application of 2 kg ha<sup>-1</sup> nitrogen, being based on the formula 2-20-20 (NPK), most commonly used by soybean growers in Polo Santarém/Belterra Grain. Also, WF<sub>gray</sub> values were recorded from recommendations in Brazilian literature (22 kg ha<sup>-1</sup>), evaluating the comparative values of these footprints ashes by nitrogen fertilization. soybean cultivars evaluated were: BRS 333RR, BRS 8990RR, Sambaíba, Tracajá, 98y51 and 98y5ha, recorded throughout the cycle of these cultivars. It was considered the discharge limits standards of effluent into water bodies, according to law No. 357/2005 of the National Environment Council - CONAMA.

The results showed substantial declines, approximately 10 times smaller, gray footprint indicator for chemical fertilizer formulation most commonly used in the region with maximum WF<sub>total</sub> 2100 m<sup>3</sup> ton<sup>-1</sup> and minimum of 815 m<sup>3</sup> ton<sup>-1</sup>. We conclude that the field data in grain production systems should be taken into account in estimates of sustainability indicators as Water Footprint of the Amazon. Literature data for other regions can induce overestimation, hampered the application of research results in the region.

Keywords: Gray Water Footprint, Soybean, Fertilization Nitrogen, Amazon