**Título: Deve ser objetivo e conciso (Fonte Times New Roman, cor preta, tamanho 13, centralizado)**

Autores: Nome completo (Instituição, e-mail) – Fonte Times New Roman, cor preta, tamanho 10, justificado.

*Área temática:*

**Resumo**

O resumo deve ser objetivo e conter: introdução, objetivo, resultados, discussão e conclusão, limitando a 100 palavras. Fonte: Times New Roman, cor preta, tamanho 10, justificado. The cultivation of safower for biofuel production can help to reduce dependence on fossil fuels and promote sustainable agriculture, particularly in semi-arid regions where water resources are limited or where other crops are not well-suited to the local climate and soil conditions. This study applied the Life Cycle Assessment (LCA) methodology to quantify the greenhouse gas (GHG) emissions associated with the farming of safower seeds at an experimental plot located in Northeast Brazil (semi-arid region).

**Palavras-Chave:** 4 palavras-chave Times New Roman, cor preta, tamanho 10, justificado.

**Introdução**

Fonte Times New Roman, cor preta, tamanho 10, justificado, Máximo 100 palavras.. Greenhouse gas (GHG) emissions are one of the negativeimpacts associated with the use of nonrenewable energysources, contributing to global warming and climate change.According to the Intergovernmental Panel on ClimateChange (IPCC, Intergovernmental Panel on Climate [1], the increase in atmospheric temperature resultingfrom anthropogenic activities in the period 2010–2019 was1.06°C and the carbon dioxide concentrations in 2019 werethe highest recorded within the last 2000 years. In this context, the use of renewable energy sources such as biomass is primordial to decrease GHG emissions and other environmental impacts associated with the use of fossil fuels [2].

**Objetivos**

Fonte Times New Roman, cor preta, tamanho 10, justificado.

**Material e Métodos**

Fonte Times New Roman, cor preta, tamanho 10, justificado, Máximo 100 palavras.. Life Cycle Assessment (LCA) is a consolidated, state of the art methodology to quantify the environmental impacts associated with products, processes, and activities. LCA has been standardized by the International Organization for Standardization (ISO) in its standards ISO.. Safower was cultivated at a 5000 m2 area located at the experimental feld of the Federal Institute of Education, Science, and Technology of Rio Grande do Norte (IFRN), campus Apodi,with geographic coordinates 5°37′32″S 37°48′30″W. The region presents a semiarid climate, and data collection occurred during the period june–september 2022 (dry season).

**Resultados e discussão**

Fonte Times New Roman, cor preta, tamanho 10, justificado, máximo 250 palavras. When specifically evaluating GHG emissions in a LCA study, the following aspects can be part of the analysis: carbon sequestration, energy use, fertilizer and pesticide emissions, water use and emissions, methane emissions, changes in land use, and carbon footprint reduction strategies. These aspects will be covered herein. The amount of safflower seeds produced in the June–September 2022 cycle was 1185 kg. Table 2 shows the GHG emissions obtained after selection of the appropriate representative processes and introduction of the material and energy flows associated with one cycle of safflower production. Values in bold refer to the total emissions per phase. Considering the production of 1185 kg of safflower seeds, the specific emissions per kg of safflower seed produced are 0.4882 kg CO2- Eq. (578.49 divided by 1185 kg). When analyzing the emissions per production phase, the highestemission are associated with the preparation of soil (322.8 kg CO2-eq, which corresponds to 55.8% of overallemissions), followed by water consumption (115.52 kgCO2-eq, 19.96%), fertilization (109.16 kg CO2-eq, 18.86%), the harvest of seeds (23.52 kg CO2-eq, 4.06%), and finallythe material composition of the irrigation system (7.50 kgCO2-eq, 1.29%). Figure 3 summarizes the breakdown ofemissions associated with one cycle of safflower cultivation.

**Conclusão**

Times New Roman, cor preta, tamanho 10, justificado, máximo 100 palavras. Life Cycle Assessment (LCA) is a consolidated, state of the art methodology to quantify the environmental impacts associated with products, processes, and activities. LCA has been standardized by the International Organization for Standardization (ISO) in its standards ISO.

**Agradecimentos**

NUPPRAR, IQ/UFRN, UFRN, Fapesq-PB, UFPB, MCTI, MDA. Fonte Times New Roman, cor preta, tamanho 10, justificado.

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**Referências bibliográfica**

Seguir a ordem numérica sequencial de citações no texto .

1 Moeller D, Sieverding HL, Stone JJ (2017) Comparative farm-gate life cycle assessment of oilseed feedstocks in the Northern great plains. BioPhys Econ Resour Quality 2:1–16

2 Monte DM, Cruz PL, Dufour J (2022) SAF production from cameline oil hydrotreatment: a technoeconomic assessment of alternative process configurations. Fuel 324:124602