



# 7<sup>th</sup> INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION Academic

“CLEANER PRODUCTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS”

## Life Cycle Assessment of the Production of Biodiesel from the Seeds of Tabaco Solaris

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### Abstract

The objective of this work is to analyze the life cycle of the agricultural production of Seed Solaris for purposes of obtaining biodiesel in the region of Santa Cruz do Sul. Mainly in this municipality of Rio Grande do Sul, there is a high tobacco production aiming at obtaining leaves to be used in the manufacture of cigarettes. Solaris tobacco, known as energetic, has been installed in experimental farming and has an agricultural production similar to conventional tobacco. In this sense, we performed the evaluation of the stage of seed production using Life Cycle Analysis and thus, recognizing, during the stage of experimental crops, what can be improved in the production to reduce the environmental impact. The work was done taking into account the resources needed to obtain 1kg of seed as a functional unit in the SimaPro 8.5 software, using the Ecoinvent 3.4 database, and the ReCiPe 1.06 evaluation method in the hierarchical perspective, other methods were also used for comparison purposes. It has been found that compared to other biodiesel production lifecycle assessment initiatives, it is understood that producing Solaris tobacco seed biodiesel leads to similar impacts to those identified with other crops, with total damage to the production of 1 kg of Solaris tobacco oil biodiesel of 1.07E-05 Daly, 7,13E-08 species.yr and 1,42E + 01 \$, for categories related to human health, ecosystem and natural resources, respectively.

*Keywords: Energetic Tobacco, Solaris, LCA, LCIA, SimaPro*