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# 🌐 Methodology for TFP Bioeconomy Impact post Covid-19 on the agricultural economy

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C A Zuniga-Gonzalez<sup>1</sup>

<sup>1</sup>National Autonomous University of Nicaragua, Leon

C A Zuniga-Gonzalez: Escuela de Ciencias Agrarias y Veterinarias. Departamento de Agroecologia.



**C A Zuniga-Gonzalez**

National Autonomous University of Nicaragua, Leon

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**We use this protocol and it's working**

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## Abstract

**Methods:** The panel data was organized with FAO Statistic data. Linear programming with an enveloping data analysis (DEA) approach was used to measure the Malmquist TFP indices to determine the inter-annual changes by region in productivity and technical efficiency.

## Materials

Resources

FAO Statistic

DEAP 2.1

VOSviewer

## Troubleshooting

## Before start

The model of **Georgescu-Roegen (1976)** was considered to define the structure of Panel Data and the DEAP software.

## Methodology for TFP Bioeconomy Impact post Covid-19 on the agricultural economy

- 1 Panel Data. The data was organized from the statistic FAO in panel data. These variables are Value Agriculture ( $VA_{it}$ ), Land use ( $LU_{it}$ ), Unit Capital Stock ( $UCS_{it}$ ), Annual population ( $AP_{it}$ ), Trade Indices ( $TI_{it}$ ), Consumer Prices, and Food Indices (2015 = 100) ( $CPF_{it}$ ). All variables were affected by Covid-19.
- 2 DEAP 2.1, Data Envelopment Analysis (Computer) Program (**RRID:SCR\_023002**) was used, Coelli [17]. Three text files were used for running computing. The text file refers to panel data containing 60 observations of six regions over the 2012–2021 years period. The second file is Instructions, where the procedure is indicated, and the third is the results (output) that are shown in the results sections. One output is considered with five inputs listed in the next section.
- 3 Processing data was the last phase for the built chart and table that explain the effect of Covid-19 on the agricultural economy. The Bioeconomy was and is an alternative to change a mitigate the effects.

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