**INSTRUCTIONS**

The process is carried out in three stages:

**1 Time series radiometric data acquisition in the Google Earth Engine platform**

The acquisition of radiometric data from Landsat can be done by programming in javascript. This algorithm has the function of searching in the Landsat image collection the images in which are free of cloud coverage, using the criterion of the QA value. Once the images of interest are identified, it is possible to download the radiometric values in the sample points previously inserted in the platform. Os procedimentos que o usuário deve realizar são:

Import the sample points in shapefile format.

Set the date and satellite of interest.

Copy the names of the images that are plotted on the console tab and save to a csv file with the order name. This file will be used for the yield estimation algorithms.

**2 Estimation of yield by the spectral agrometeorological model**

The agrometeorological estimation requires meteorological station data to obtain evapotranspiration, air temperature, wind speed and relative air humidity values. Information about the water penalty coefficient (ky), gross dry matter production rate for a yo standard crop (kg⋅dia.ha-1 ) and Rse the active short wave radiation on clear days (cal.d.cm-2) can be found in the references of the article. This information should be organized in a csv spreadsheet according to the model named evapo.csv.

The organization of the sample points with the Yield value must be in accordance with the file order.csv. In this algorithm the landsat radiometric values are estimated by the polynomial regression model, thus needing the spreadsheets from Google Earth Engine according to the example files.

**3 Yield estimation by Random Forest model**

In this algorithm the polynomial regression and plotting of results will be evaluated. The order of dates must be entered according to the file coming from Google Earth Engine.

The sample points follow the organization of the data according to the example file, and each date of evaluation of the sample points must be below the previous year in the spreadsheet.