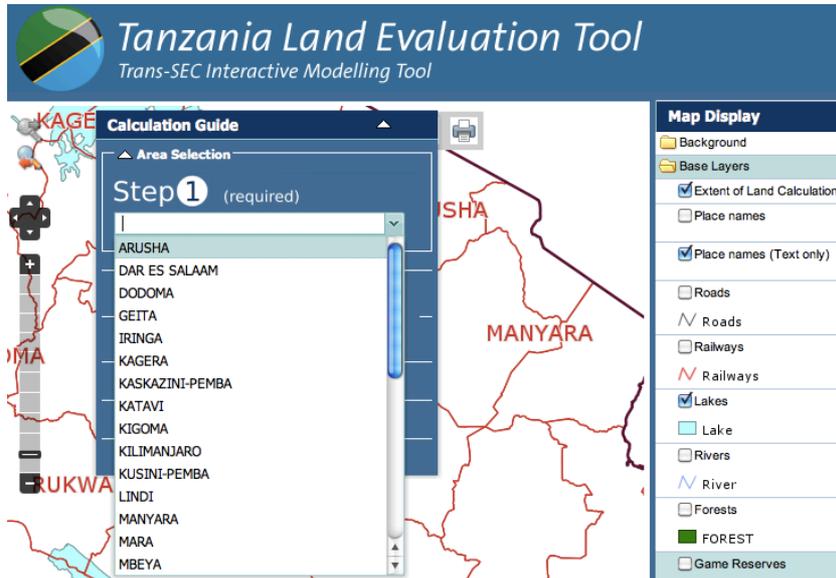


The Tanzania Land Evaluation Tool

This tool has been developed in order to enable simple ex-ante land evaluation procedures, e.g. whether it could be biophysically appropriate to introduce a certain crop into a specific area, when the biophysical crop demands are known. The crop demands are then compared to the biophysical environment and a categorical map displaying four suitability classes reaching from very suitable to not suitable. The algorithm development is interactive in nature, but was kept simple in order to allow for web-GIS application. In general, the approach follows FAO procedures.

In the following, the tool appearance (A) as well as the six steps to achieve the evaluation result (B) are shortly explained.



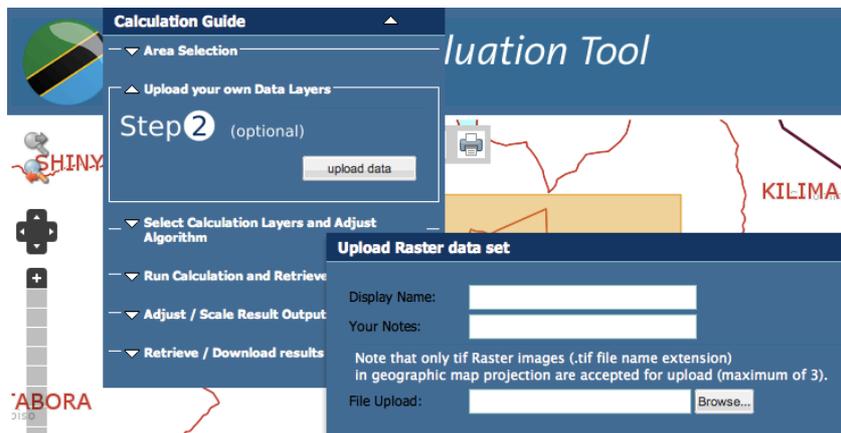
- A.
- a. The tool appears with three sections on the screen.
  - a. A map window (left)
  - b. A map display menu (right)
  - c. The calculation guide (upper left)

At the beginning the map shows only the frontiers of Tanzania and its regions. This appearance changes then with area selection (step 1 in calculation guide). You have basic functions to navigate on the map at your disposition that are explained under the Map Viewer tool. In the map display menu you can choose which type of information can be additionally presented. Per default the base layers "extent of land calculation", "place names", and "lakes" are activated. The calculation guide pop up menu can be moved within the tool's window by clicking on the header bar and dragging.

- B.
- Clicking on the white triangle opens or closes the pop-up menu or parts of it.

STEP 1: You are requested to preselect a region, e.g. Dodoma. A rectangle appears that encloses this region. If you click onto the rectangle, drag points appear that allow to change the application to a specific area. Alternatively "Entire Tanzania" can be chosen at the end of the drop-down menu. Intervention area selection is a mandatory step.

STEP 2: The upload of own data layers is not mandatory but enhances the performance of the system. In the given system mainly bio-physical data layers are provided to evaluate crops. However, the system can also be applied to other e.g. socio-economic questions. Then it might be useful e.g. to provide spatial information on the distance to the next market or school. Only raster data can be uploaded. The best way is by using the geotiff-format. The number of layers that can be uploaded is restricted to three in order not to overcharge web-GIS capabilities.



STEP 3: For running the calculation this step is optional since default layers and values are preset. However, during the definition of this step you can introduce your expert knowledge in order to influence the quality of the output. As said earlier the major intended application is crop evaluation. Soil pH can be used as a proxy for nutrient availability and potential toxicities. Soil texture is an indicator for nutrient stocks, and the available water capacity for the water availability and potential drought effects. Therefore, these three soil variables are preset for any evaluation but can be replaced by using the "add input layers" button. Here a number of meteorological and soil/land properties are available that are frequently used in the definition of crop demands by Sys et al. (1993). Please do not use more than five to six variables in the final evaluation procedure, since the algorithm is based on the multiplicative Storie Index. This means, the more variables you introduce into the calculation, the lower the final evaluation result. Since some variables might be more important than others for e.g. crop performance, you have the possibility to change the weight factor for any variable in the algorithm. The output of the algorithm are four suitability classes. These are predefined for maize on a very general basis. You should use your expert knowledge in order to adapt the preset figures to your specific environment and crop or any other application under the "change algorithm" button.

**Calculation Guide**

- Area Selection
- Upload your own Data Layers
- Select Calculation Layers and Adjust Algorithm
- Step 3 (optional)
- Run Calculation and Retrieve Results
- Adjust / Scale Result Output
- Retrieve / Download results

**User defined Changes to Algorithm**

**Layer Classification**

	Class 4		Class 3		Class 2		Class 1	
	min >	max <=						
Soil pH (*10):	0	52	52	55	55	58	58	70
Soil pH (*10):	85	140	82	85	70	82		
Soil texture:	0	15	15	35	35	55	55	100
AWC (mm):	0	400	400	800	800	1200	1200	2000

STEP 4: Here you give the command to calculate the spatial result for your predefined area. Most soil data are available at 250m resolution. Meteorological data have a resolution of 0.5°. Please remind this difference in spatial resolution when interpreting the map output that is available at 250m resolution only.

STEP 5: Land evaluation hardly achieves reasonable results with the first guess but is an iterative process. Therefore, we have included an additional step to adjust the weight of variables without repeating the whole procedure.

STEP 6: Finally you can download your spatial results as geotiff. This format allows you to import the data into your desktop GIS and to further treat them using other data layers or algorithms according to your needs.