

# Intercropping

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## Objective

Run a crop model with two sole crops and with intercropping. Compare the productivity of intercropping vs. sole cropping. Run different intercropping scenarios by varying emergence (sowing) dates and strip widths. Try to find a combination that maximises the LER (land equivalence ratio).

## Materials

Use the modeling framework Simplace to run the crop model **Lintul5**. It calculates potential yield (no water or nutrient limitations). For intercropping the biomass module runs twice. Radiation between the two crops is distributed according to the model from *Fang Gou, On yield gains and yield gaps in wheat-maize intercropping: opportunities for sustainable increases in grain production, PhD thesis 2017*. Data and solutions are provided by us.

The data is provided in the zip file `intercropping.zip`. Please unpack the file and copy the whole folder `intercropping` into the folder `SIMPLACE_WORK\sim`. The `SIMPLACE_WORK` folder is normally located in your home directory `C:\Users\your_username\`.

The simulation outputs (csv files) are written to the folder `SIMPLACE_WORK\output\sim\intercropping`.

## Methods

Run the solutions `IntercroppingLintul5Groundnut.sol.xml` and `IntercroppingLintul5Maize.sol.xml` for sole crops and `IntercroppingLintul5MaizeGroundnut.sol.xml` for intercropping.

Run the models for the locations `sevilla` and `wageningen`. Calculate the LER for intercropping and check if intercropping has a benefit.

Run different intercropping settings. Analyse the outputs and try to find a setting that maximises the LER.