

## Steps to generate input data files for econ model in MINT Model version 7.0, December 20, 2019

### INPUT DATA FILES THAT VARY BY CROP, REGION, AND YEAR

- Master dataset for all crops, years, and regions is MINT\_econ\_inputdata\_all.csv.
  - Crops: barley, maize, millet, pulses, sorghum, teff, wheat
  - Years: 2009-2018
  - Regions: Afar, Amhara, Benishangul-Gumuz, Dire Dawa, Gambella, Harari, Oromia, SNNP, Somali, Tigray
  - Input data:

Field	Description	Units
land_area	Observed land area planted by crop	hectares
crop_yield	Observed yield by crop	kilograms per hectare
crop_price	Observed crop prices	USD per kilogram

- Choose one year and one region. This choice will need to be tracked in MINT. The only differentiator within the economic model between regions and years are the input datasets, described below. There is no region or year name embedded in the model code. I will use Oromia 2009 as an example.
- From master dataset, extract the following input files for all crops in one year and one region. Format as in the example files for Oromia 2009.

- Input files:

File name	File contents
landdata.csv	land_area for all crops, one region-year
yielddata.csv	crop_yield for all crops, one region-year
pricedata.csv	crop_price for all crops, one region-year

- File format:

- landdata.csv

	calib
barley	451955.5
maize	933712.5
millet	98040.65
pulses	616034.7
sorghum	677092.3
teff	1081501
wheat	794835.8

- yielddata.csv

	calib
barley	1602.5778
maize	2332.97905
millet	1409.06338
pulses	1257.27671
sorghum	1847.37192
teff	1229.0929
wheat	1906.38909

- pricedata.csv

	calib
barley	0.37387836
maize	0.31635862
millet	0.4
pulses	0.86279623
sorghum	0.35949843
teff	0.64805583
wheat	0.52726436

#### INPUT DATA FILES THAT VARY BY CROP

- For other input data not included in the master dataset, use default input datasets by crop. We do not have annual or province-level data for these parameters, so we use country level data. These could be updated to vary by year and region in the future as more data become available.

- Input data files:

File name	Description	Units
lvardata.csv	Variable costs of production per unit land area	USD per hectare
fvardata.csv	Variable costs of fertilizer applications	USD per kilogram
fertdata.csv	Observed fertilizer application rates	kilograms per hectare
cyclesdata.csv	Elasticity of yield with respect to nitrogen applications at observed level of fertilizer application rates	unitless
etadata.csv	Supply elasticity with respect to crop price	unitless

- File format:

- lvardata.csv

	calib
barley	383
maize	383
millet	175
pulses	383
sorghum	350
teff	383
wheat	175

- fvardata.csv

	calib
barley	2.5
maize	2.5
millet	1
pulses	2.5
sorghum	2.7
teff	2.5
wheat	1

- fertdata.csv

	calib
barley	32
maize	32
millet	32
pulses	76
sorghum	76
teff	32
wheat	95

- cyclesdata.csv

	calib
barley	0.11
maize	0.25
millet	0.05
pulses	0.1
sorghum	0.11
teff	0.25
wheat	0.11

- etadata.csv

	calib
barley	0.28
maize	0.28
millet	0.24
pulses	0.24
sorghum	0.24
teff	0.28
wheat	0.28

### SIMULATION (COUNTERFACTUAL) INPUT FILES

- There are three input files that support the simulation of policy interventions and/or market changes, but that do not affect the model calibration. I have set the simulated price changes at zero for now.
  - Input files:

File name	File contents	
simpricedata.csv	Change in market price by crop	percentage
simfertsusidy.csv	Change in fertilizer cost by crop	percentage
simfertcon.csv	Aggregate fertilizer supply constraint	percentage

- File format:

- simpricedata.csv

	sim
barley	0
maize	0
millet	0
pulses	0
sorghum	0
teff	0
wheat	0

- simfertsubsidy.csv

	sim
barley	0
maize	0
millet	0
pulses	0
sorghum	0
teff	0
wheat	0

- simfertcon.csv

	sim
all	0