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### Interactive validation of an agent-based model in the time of COVID-19

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 the study developed an agent-based model (ABM) using MPMAS to examine the effect of smallholder farmers' investment in agroforestry to adapt to extreme climate and price variability in Ethiopia



- to validate the model, first, simulated agent production decisions were compared with cross-sectional survey data collected in the study area in 2018 - prone to overfitting
- to complement the results obtained using

# Methodology

How did we do that?

User

- experts were selected based on relevance of their expertise to the objective of the model and their experience working in the area
- two interactive web applications were developed using R Shiny

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Interactive model va	lidation: EthioAcacia MPMAS model	
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Land use	€ Criptinonia f Lineata Anna Anna Anna Anna Anna Anna Anna A	Wheat Price (% change)
		exite and attacked site wat Step 3. Run the model What to do here:

 apps were designed as a web page, could be opened using any device, simulations were run in advance and results were uploaded to the



deling process

Simulation Experiments

Model

Validation

Output Analysis survey-based validation, a participatory model validation method was designed to be conducted in the field with farmers who had participated in the survey

#### Challenge



 however, it was not possible to administer farmer-to-model interactive validation due to the COVID-19 pandemic without inflicting exposure to contagion



• an alternative online participatory platform was designed to validate the model with agricultural experts instead of farmers

- server
- session was guided by the researcher through a video call
- operates with minimal bandwidth requirements suitable for the poor internet connectivity in Ethiopia

# Conclusions



• the interactive session has been successful and provided valuable insights to improve the modeling process.





 in this way,the interactive model validation was undertaken while keeping all participants safe from COVID-19

## Acknowledgement



