



RESEARCH
PROGRAM ON
Livestock



Estimating rangeland carrying capacity using crowd sourcing and VegMeasure under Covid-19

Mounir Louhaichi, Sawsan Hassan* and Mouldi Gamoun

*S.Hassan@cigar.org

55th Congress Grassland Society of Southern Africa (GSSA)

First virtual congress

30 June - 2 July 2020

icarda.org

International Center for Agricultural Research in the Dry Areas

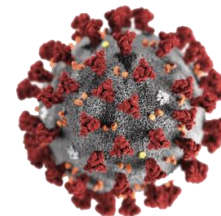
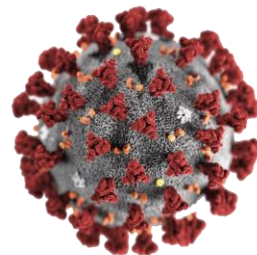
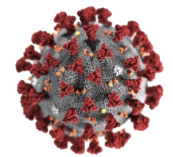
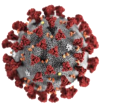
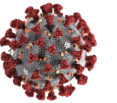
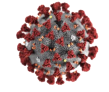
cgiar.org

A CGIAR Research Center





Coronavirus disease Impact



Rangelands

- Offers genuine win-win economic and environmental outcomes
- Relies on healthy rangelands,
- Delivers valuable ecosystem services



Rangelands

Rangeland degradation is a growing problem worldwide





Rangelands Rehabilitation

**The remedial
activities/ process to
enable these lands
to be productive
again**





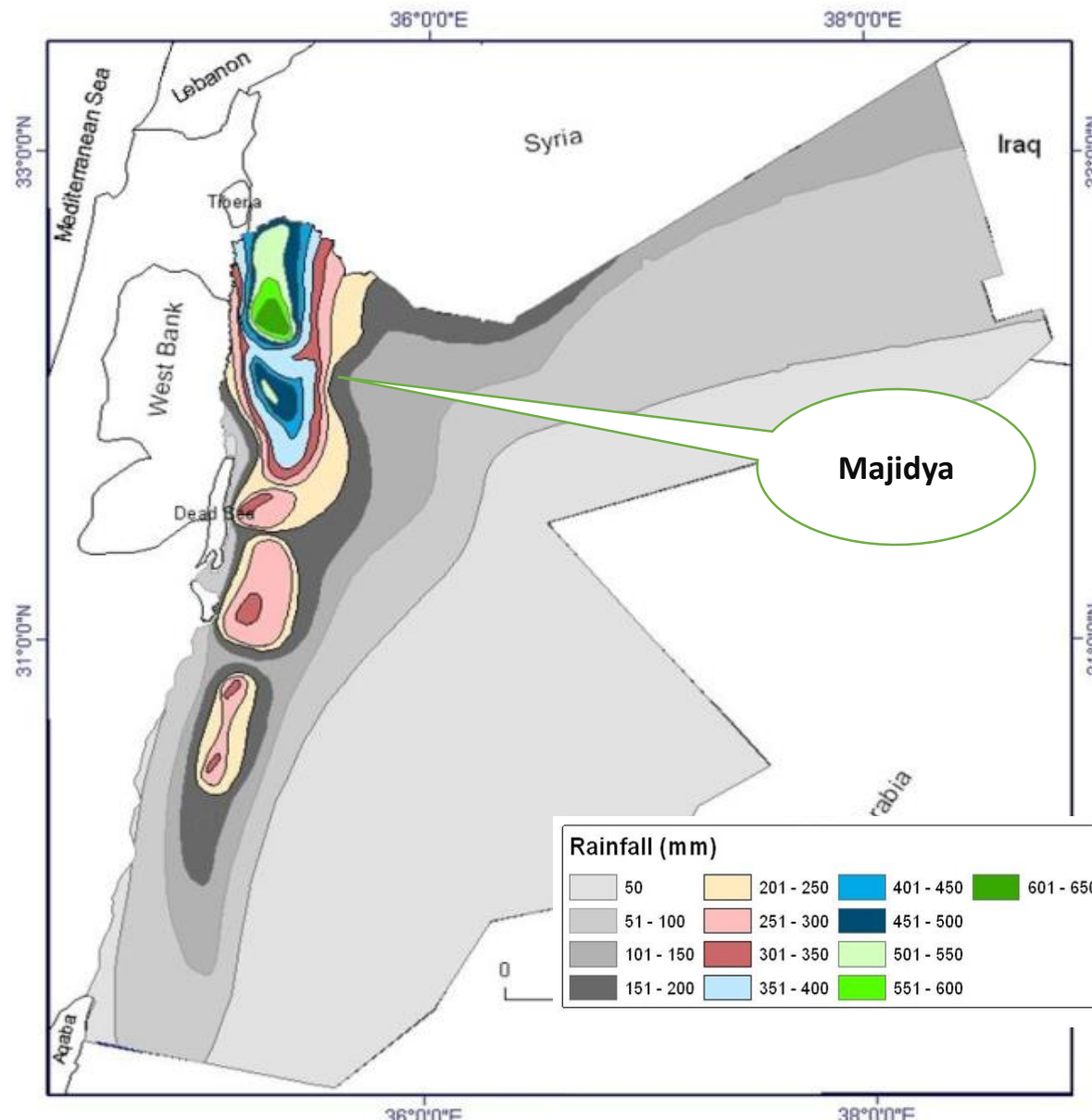
Overall objective

The aim of this study is to explore innovative ways for estimating carrying capacity respecting the containment efforts involving quarantines due to Covid-19

Study area

Jordan is located about 80 km to the East of the Mediterranean Sea, it is about 90,000 km² area.

Rangelands in Jordan are the single largest land use type, covering about 90% of the total land and receives less than 200 mm annual rainfall.



Majidya

Long term average annual rainfall = 100 mm, Rainfall of the growing season 134 mm (latitude 31° 43' 48" longitude 36° 07' 25.03" altitude 835 m)



Innovative approach

With the prolonged confinement and widespread restrictions on mobility due to Covid-19, scientists were not able to conduct necessary field sampling.

- Targeting community youth to take geo-tagged straight down images across the landscape (predefined protocols) while respecting social distancing.
- Digital images were processed using VegMeasure software to estimate plant cover and grazable biomass
- Using a combination of technologies based on remote sensing, collective action and minimum ground-truthing, to estimate productivity.

Innovative approach

Crowd sourcing



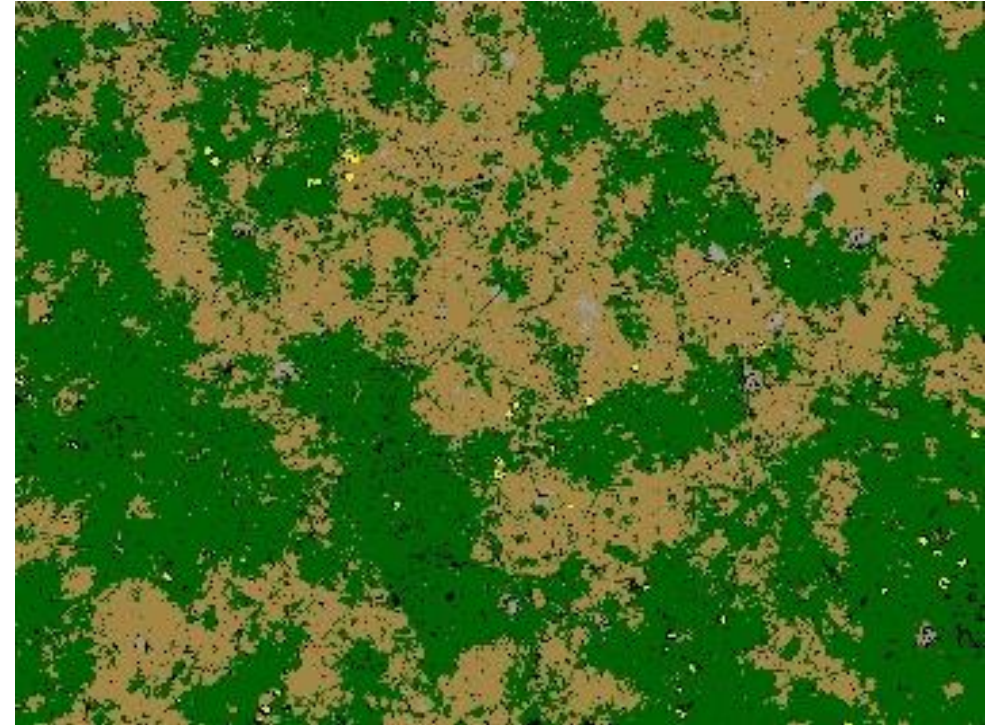
Innovative approach

VegMeasure



Original picture

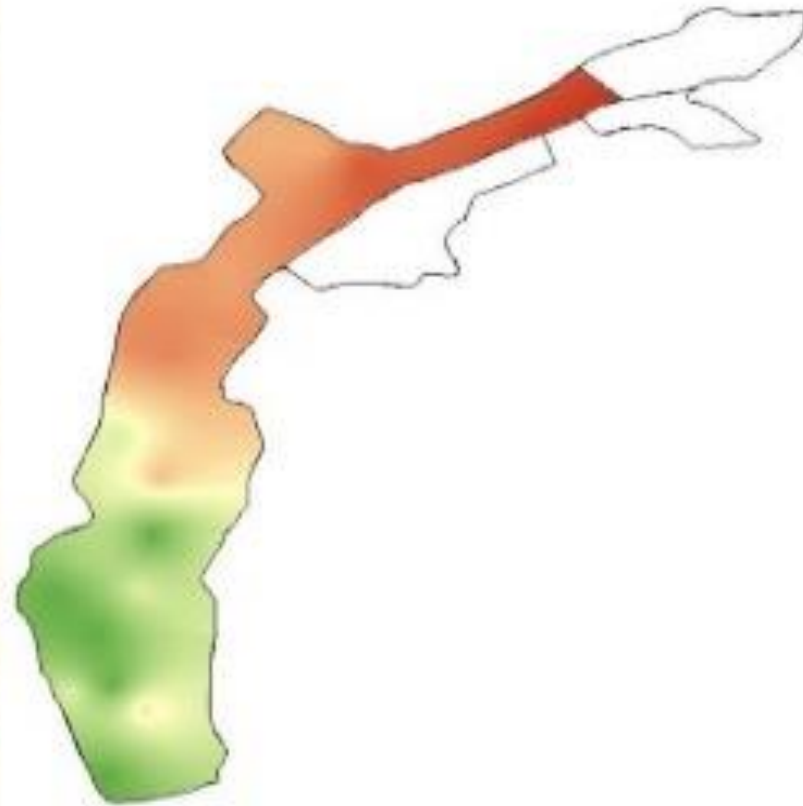
Photo Credit: Minwer Masarda



Processed image using
VegMeasure software

Innovative approach

Remote sensing



Outcomes

- Vegetation cover and biomass were positively correlated ($P < 0.05$) with R-squared 0.85. The carrying capacity was determined based on the estimated grazable biomass and the number of livestock owned by the community
- These protocols offer a rapid, cost-effective and easy to use technique for sampling vegetation.



Outcomes

- These protocols offer a rapid, cost-effective and easy to use technique for sampling vegetation.
- Engaging youth of community in rangelands rehabilitation process.



Outcomes

- These protocols offer a rapid, cost-effective and easy to use technique for sampling vegetation.
- Engaging youth of community in rangelands rehabilitation process.





Future steps

- Increase awareness about sustainable use of rangeland resources at the community level.
- Encourage networking and positive dialogue between community and decision makers to properly address the specific needs of the agro-pastoralists



Thank YOU