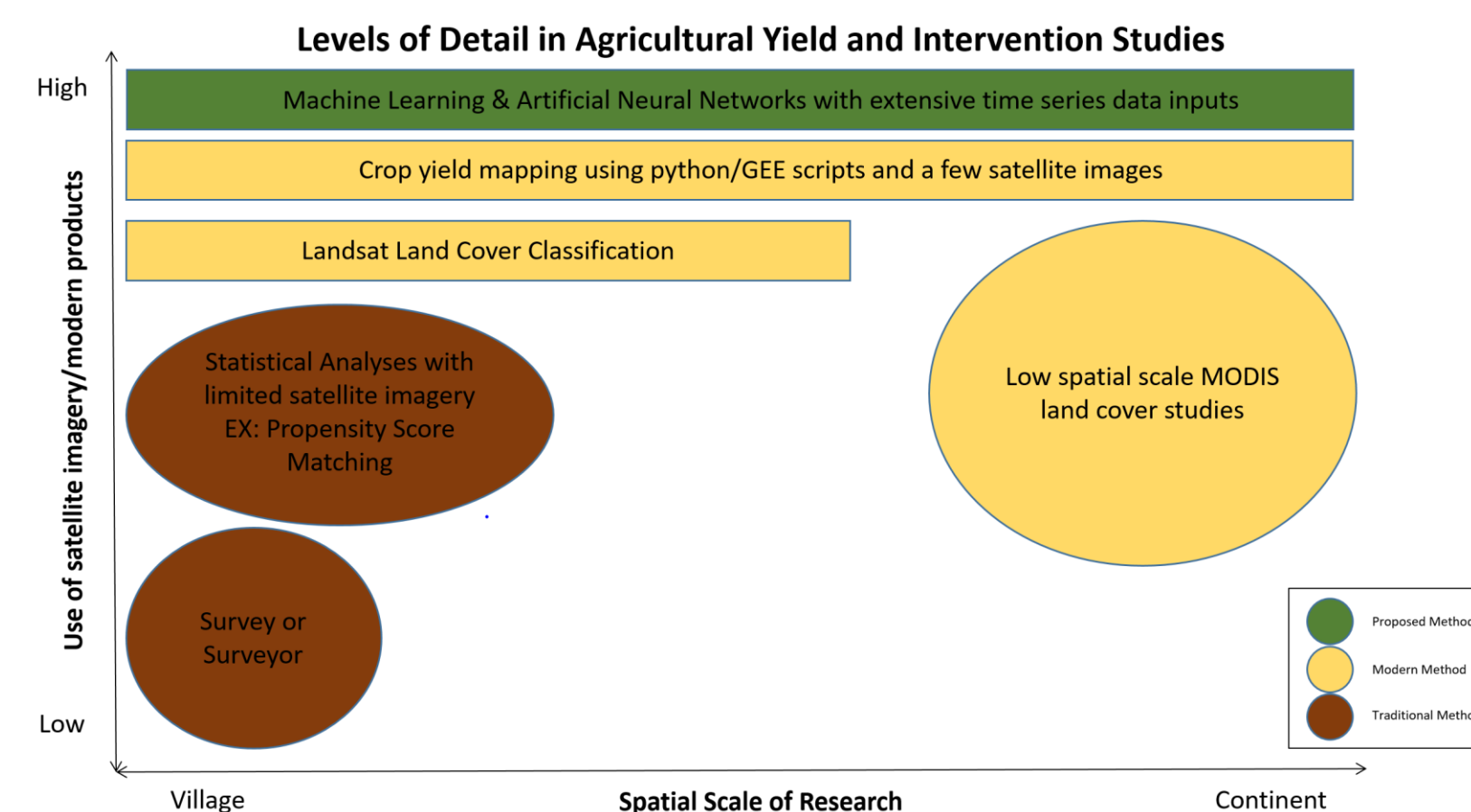


# Evaluating a New Impact Assessment Method for Agricultural Productivity Treatments in Nepal Using Machine Learning and Space-Borne Data

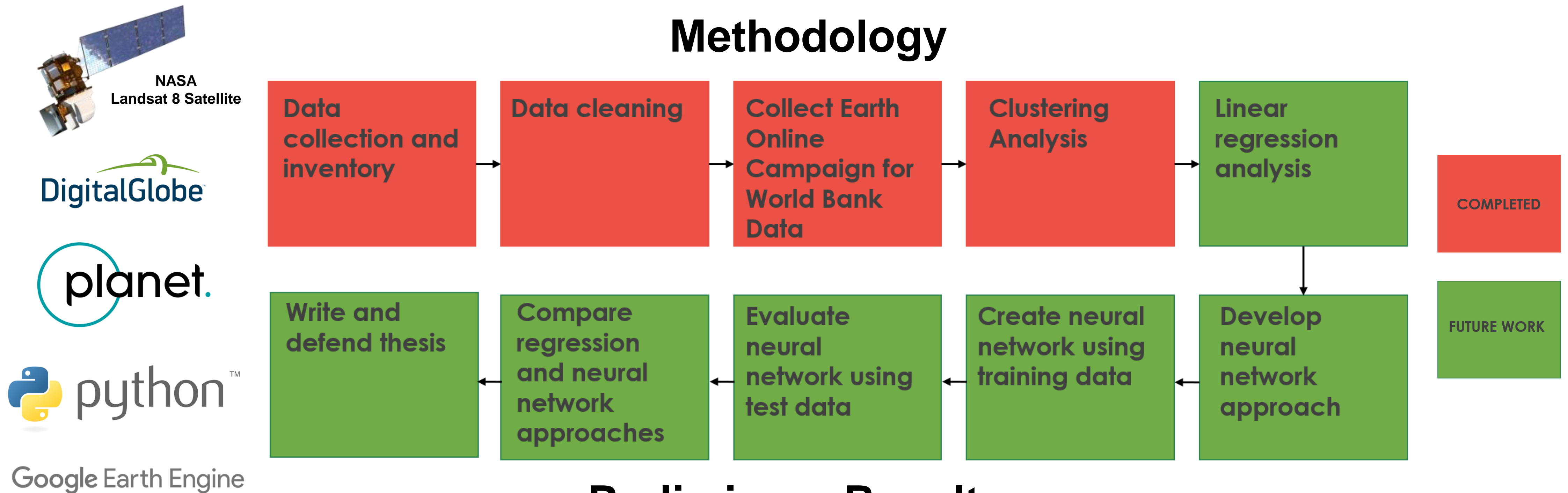
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## Overview/Introduction

Food security is a major issue in Nepal in the face of a changing climate. Interventions into traditional agricultural practices, such as irrigation or improved seed varieties, are introduced with the overall goal of improving yield. Assessing the impact of agricultural interventions is difficult for many reasons, including cost, time needed, remoteness of the Nepalese countryside, and lack of quality satellite imagery for analysis. This research is an effort to develop a new impact evaluation approach that addresses the flaws of traditional assessment methods and improves on other contemporary methods. This is done by **incorporating numerous space-borne datasets into a machine learning approach**. This novel approach will use the datasets mentioned above, along with the power and learning capability of a computer, to quickly and accurately assess the impact of interventions on agricultural greenness by back-predicting the Normalized Difference Vegetation Index (NDVI), serving as a proxy for yield in this study.



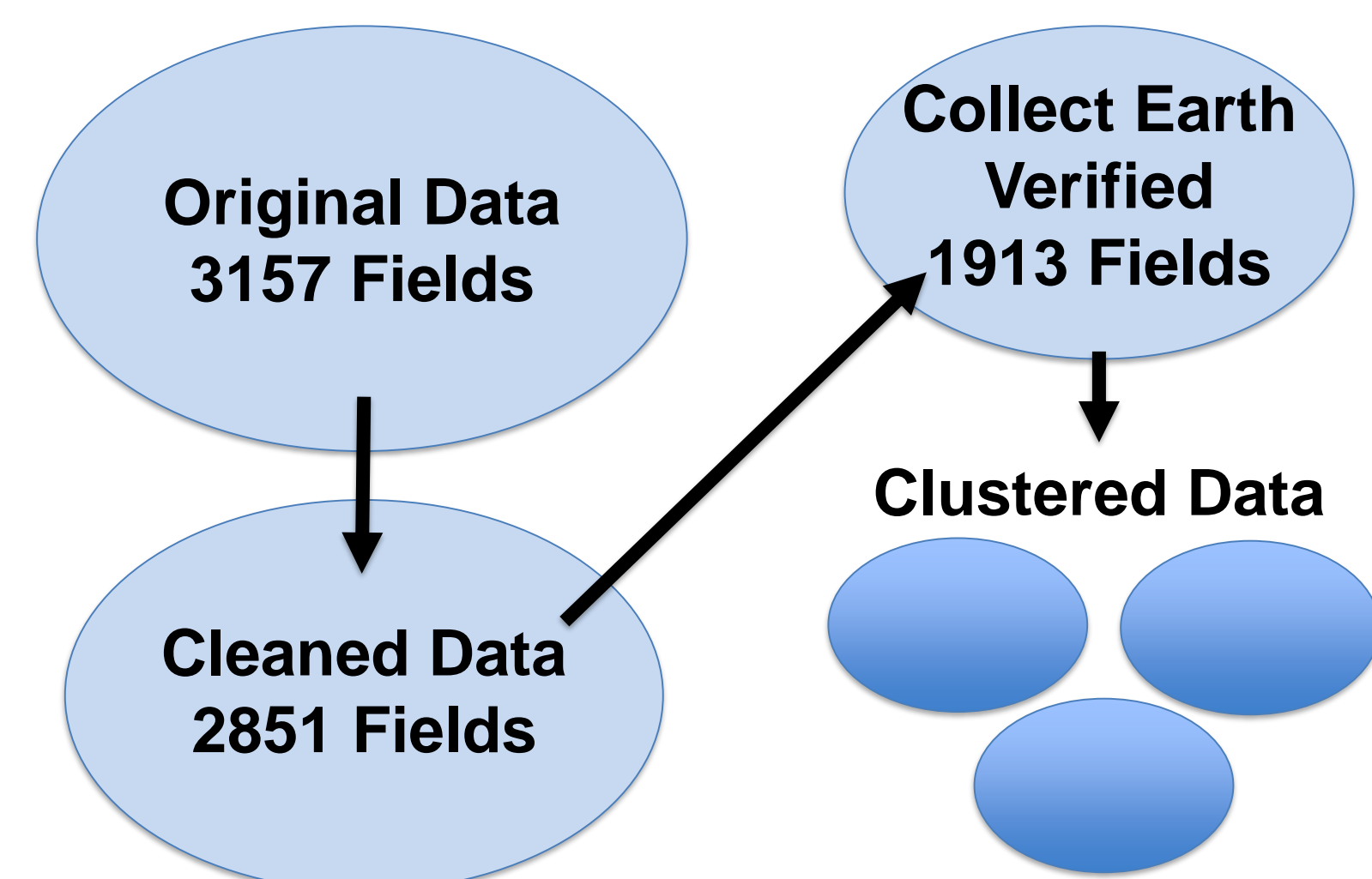
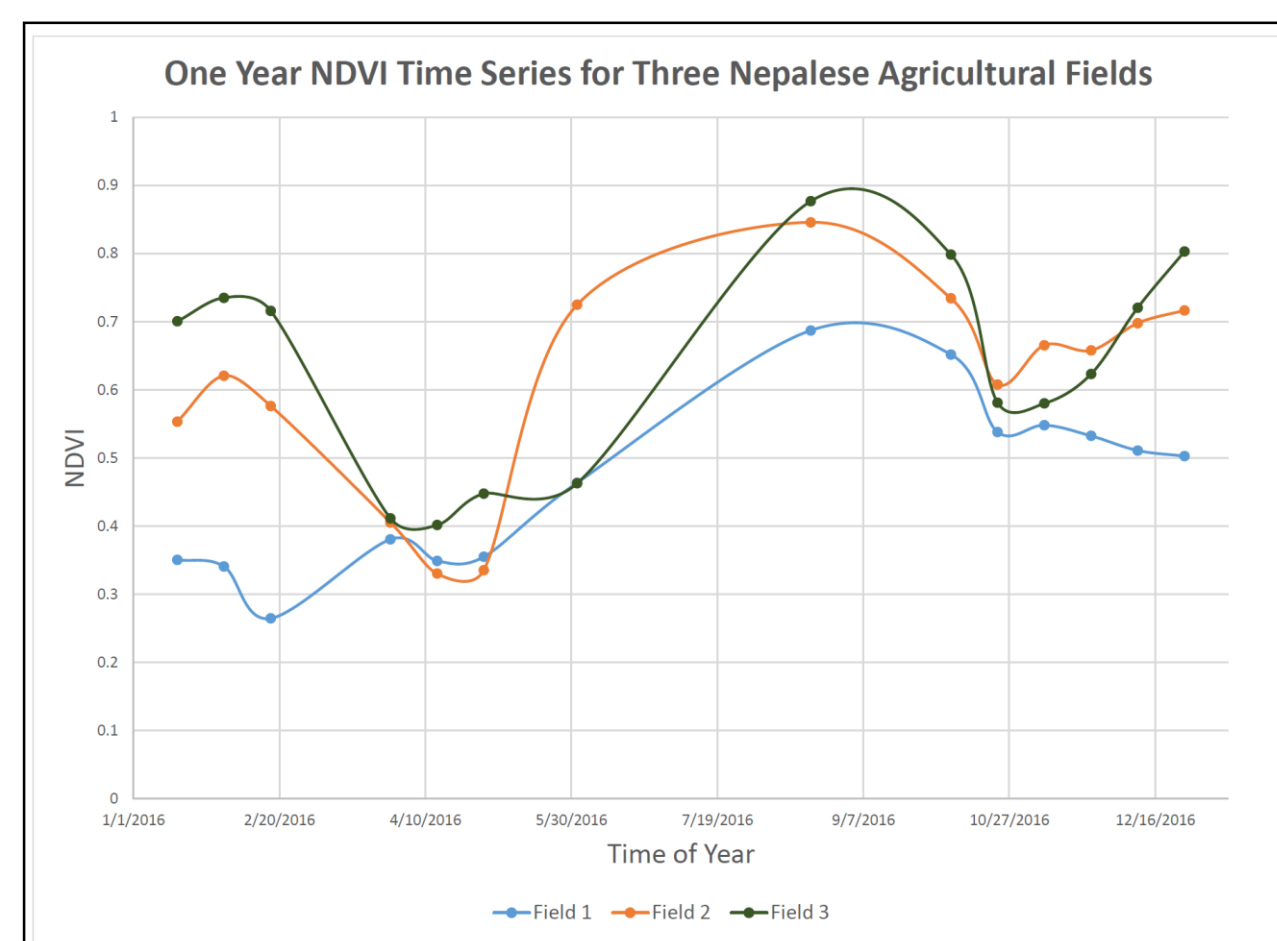
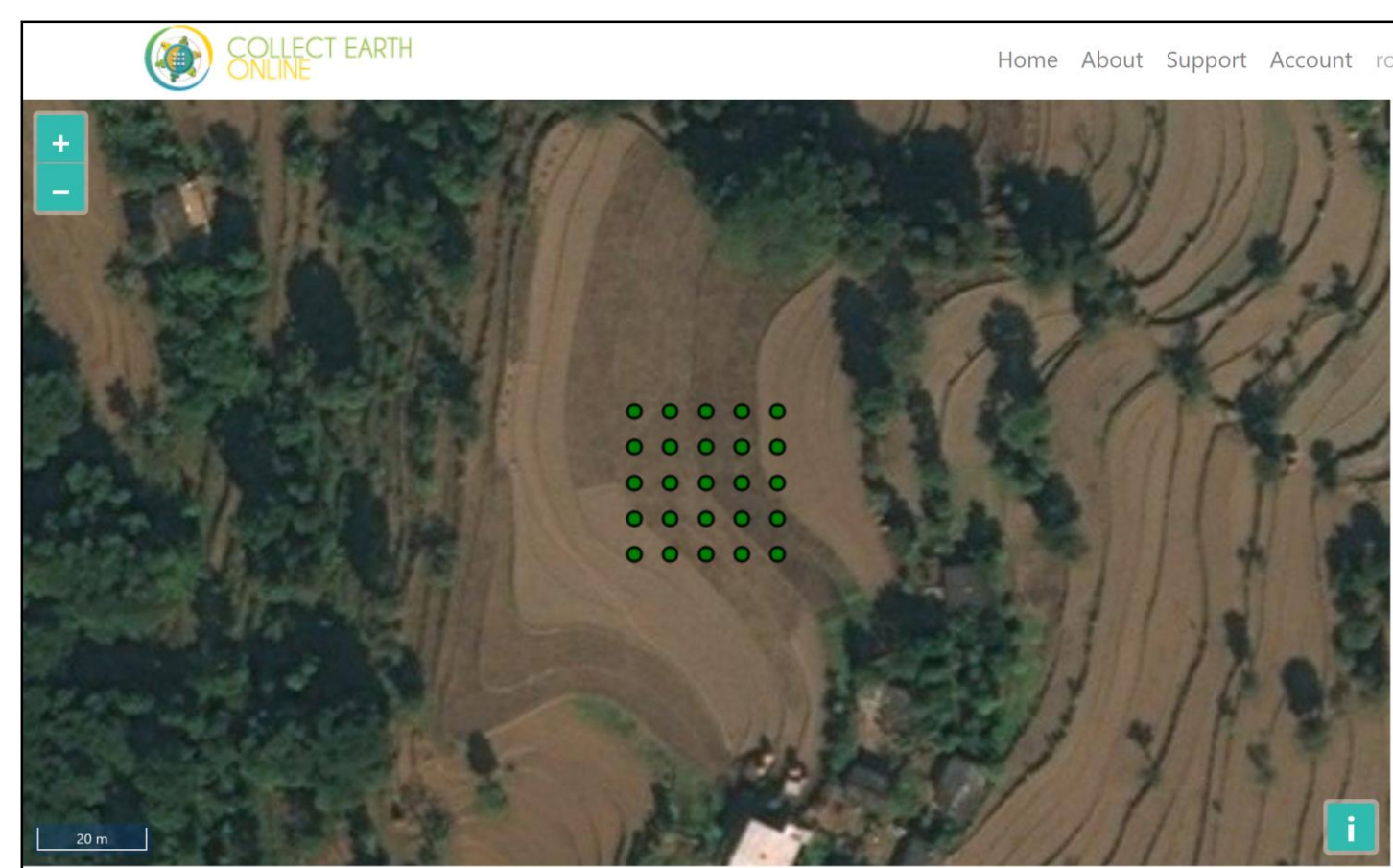
## Methodology



## Preliminary Results

Collect Earth Online was used to verify the accuracy of the original field data, utilizing high resolution (1-3 meter) satellite imagery from Digital Globe, Bing, and Planet Labs.

Clustering was performed on the time series Normalized Difference Vegetation Index (NDVI) values acquired from Landsat 8 (center) for the remaining fields using Google Earth Engine and Python.



## Impact

- This approach **utilizes space-borne products to improve** on past methodologies for assessing agricultural interventions into traditional practices
- A comparison of existing assessment methods and the new proposed method (machine learning) will need to be made. The effectiveness of the new method will then be justifiable and has the potential to revolutionize agricultural intervention impact assessments in a region of need.

## Acknowledgements

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