



"NEWLIFE4DRYLAND"

3rd Advisory Board meeting and
Networking meeting on Remote sensing
for monitoring of land degradation and
assessment of NBS effectiveness"

3 November 2021

Sven Kallen - Life Terra foundation



LET'S PLANT TOGETHER





Climate action for citizens

- Life Terra is a foundation that leads a consortium of 16 organisations of 8 countries. Our mission is to restore our connection with the earth and to enable people to take impactful climate action now
- We facilitate tree planting, educate future generations, and develop tree monitoring technology

Our goals for 2025

We are ambitious because we know that the world needs massive [#climateactionnow](#)



500

Million trees planted



3.536.423

Tons CO2 captured



1.350.000

Citizens participating



14.000

Classrooms participating

Events



Tagging



Life Terra

My account

My overview

You've got

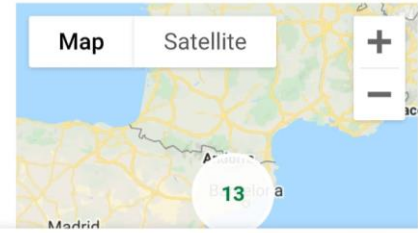
57 trees

Together we've planted

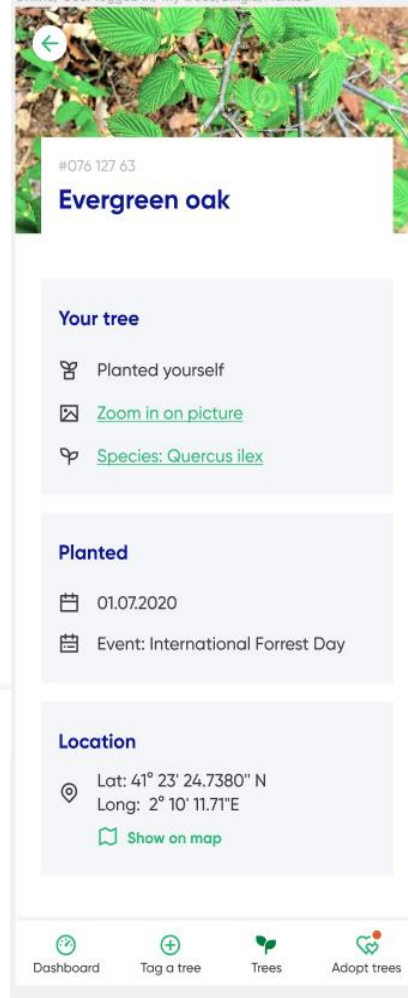
93896 trees

My trees

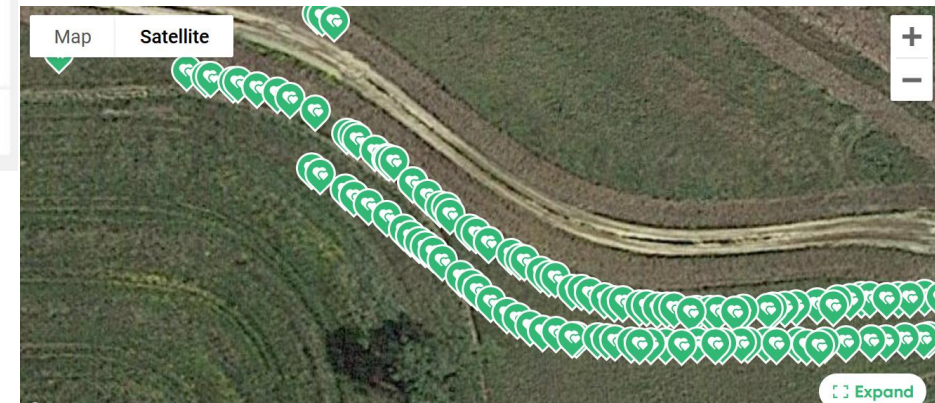
[See all trees](#)



Dashboard Tag a tree Trees Adopt trees



Each tree individually geo-localised



Company dashboard example



Menu

 Dashboard

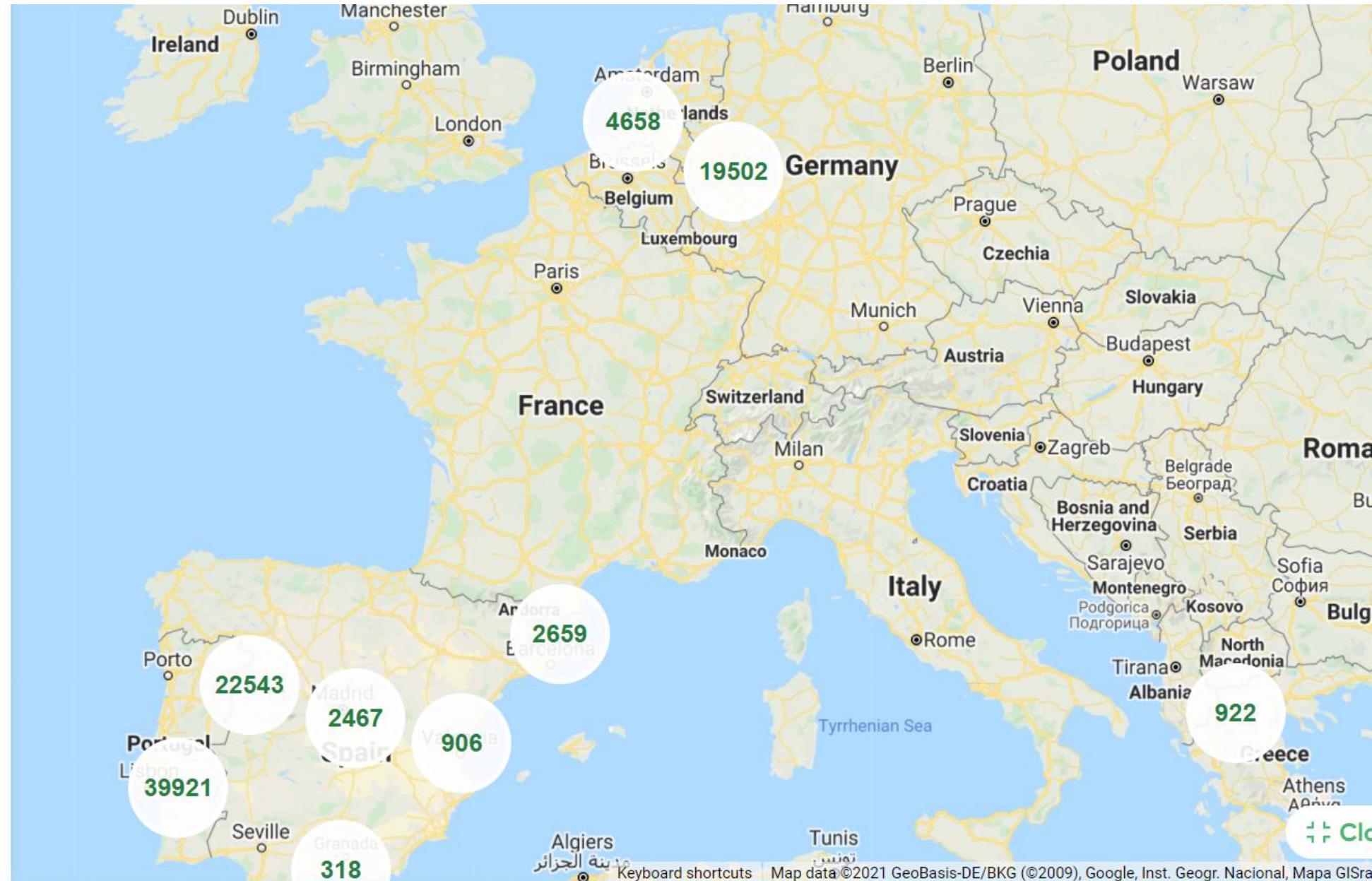
 Trees

 Adopt trees

Account

 My Account

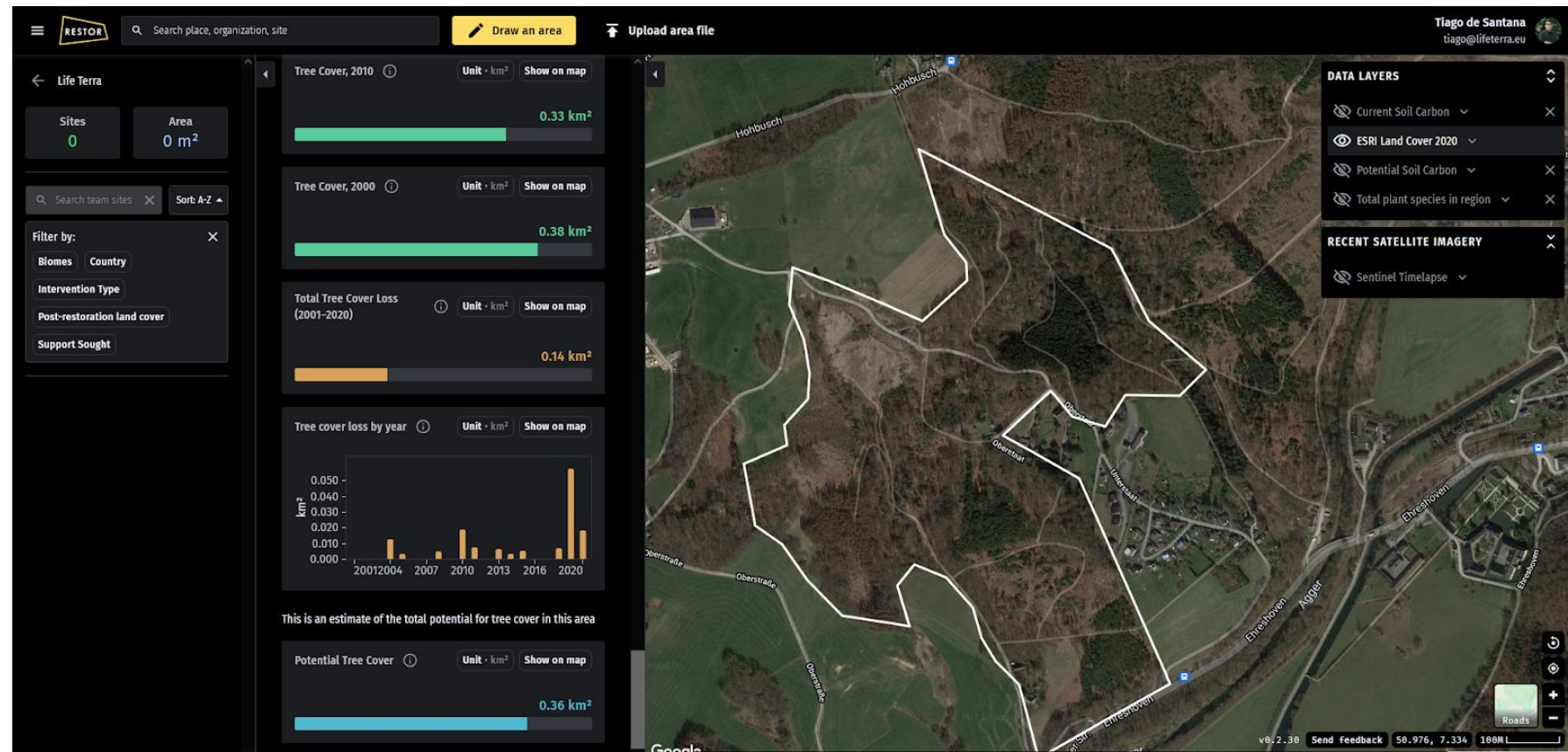
 Sign out



Plant trees. Grow forests. Restore Earth.

Collaboration with Restor (ETH Zürich)

- Apt restoration locations
- Species selection
- Climate resiliency
- Feedback loop
(on what was planted where and when → performance data)



Satellite Monitoring

- ● Individual tree monitoring with VHR imagery
 - Explore neural network approaches for automatically identifying tree crowns
 - Determine minimum tree (canopy) size that can be detected
 - Explore transferability to different sites
 - Work with images from different sensors (< 1m resolution)



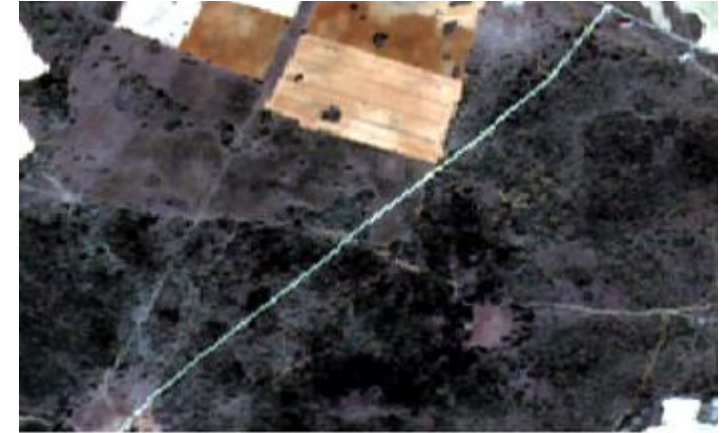
Dueñas, Spain; Pleiades, 0.5m, August 3 2020



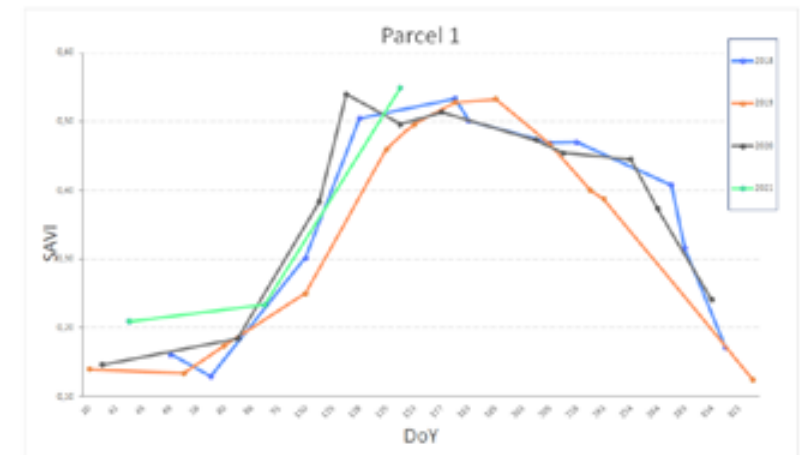
Satellite Monitoring

Plot Health Monitoring

- Extract Sentinel-2 data over different sites
- Explore different vegetation indexes for time series analysis
- Determine potential for early warning of plot stress
- Possible traffic lights system indicating plot health



Dueñas, Spain Sentinel-2



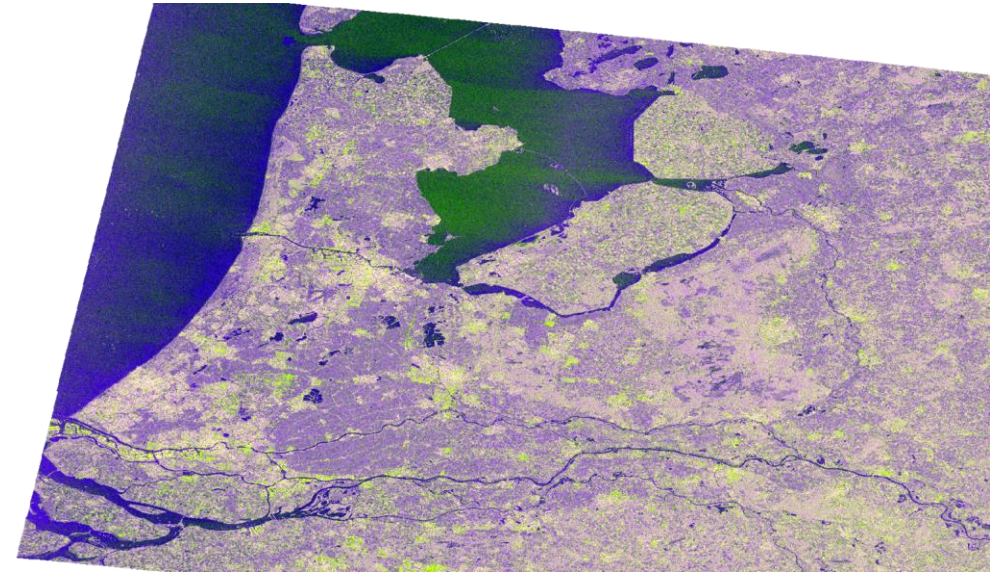
Vegetation index time series - 4 years
Klimawald Germany



Satellite Monitoring

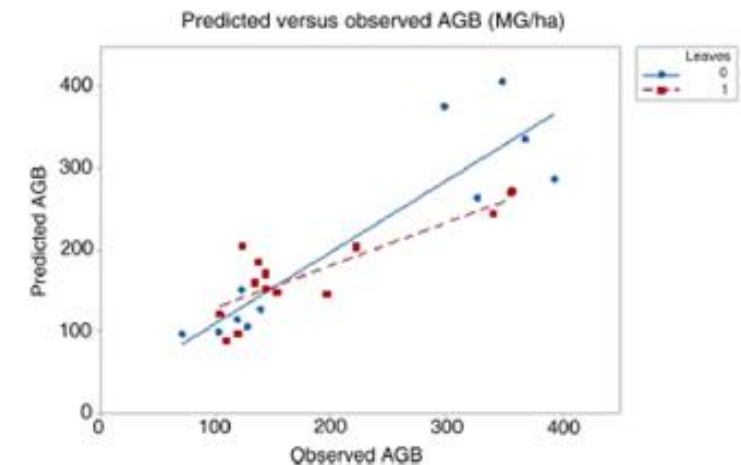
■ Estimate Above Ground Biomass

- Identify appropriate in-situ datasets with help of partners
- This may include National Forest Inventories
- Need AGB estimates for trees at different ages/sizes
- Focus on Sentinel-1 SAR data
- Determine most appropriate algorithms for in-situ retrieval of AGB at plot level (min size 1 Ha)



The Netherlands, Sentinel-1

Contains modified Copernicus Sentinel data [2021], processed by Cybele



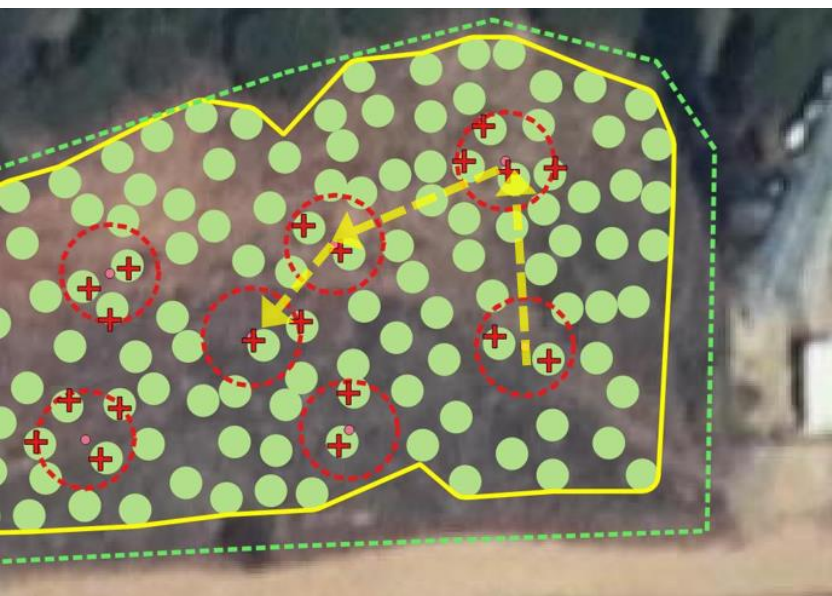
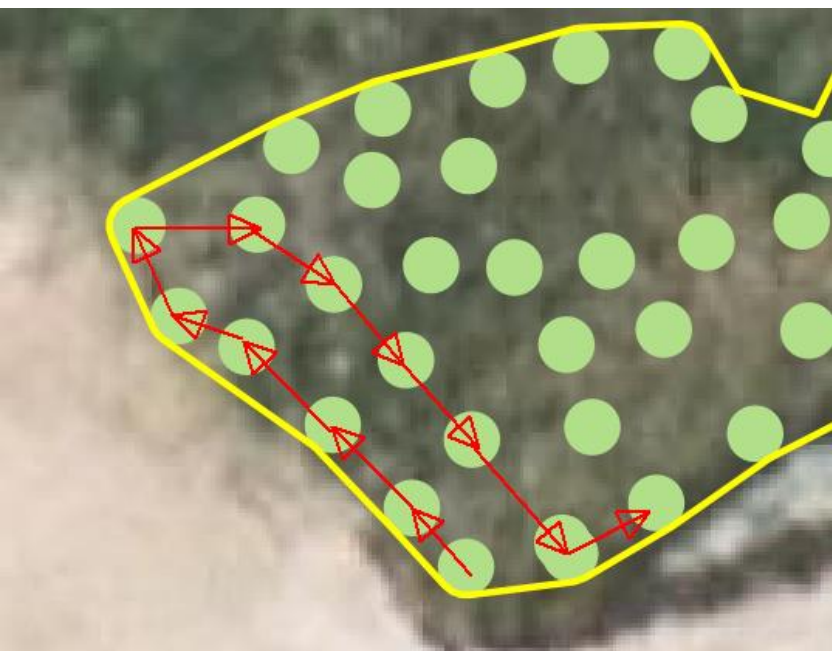


— Additional monitoring

■ Citizen science strategy

- Final monitoring design and formulation of methodology to be used by stakeholders/citizens
- Replicate monitoring on plantations in Germany
- Decide monitoring approach tree-by-tree/sampling





Citizen monitoring

- Monitoring approach based on plantation size
 - tree by tree
 - sampling - small circular plots
- Measure height of trees
- Estimate vigor (to be decided)
- Recognition of species





Life Terra is a consortium of 16 partners from 8 countries

4 working groups: Technology, Implementation, Education, Communication





Life Terra

LET'S PLANT TOGETHER

Contact: trees@lifeterra.eu



LIFETERRA.EU

