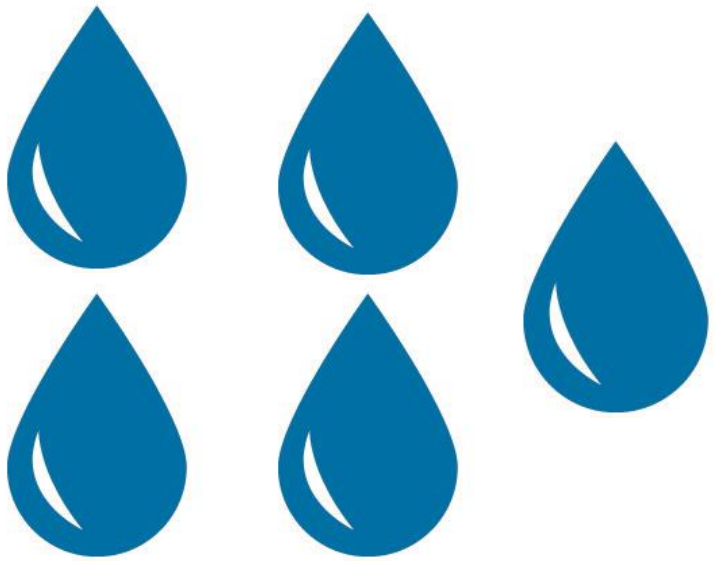
Irrigation Machine Learning

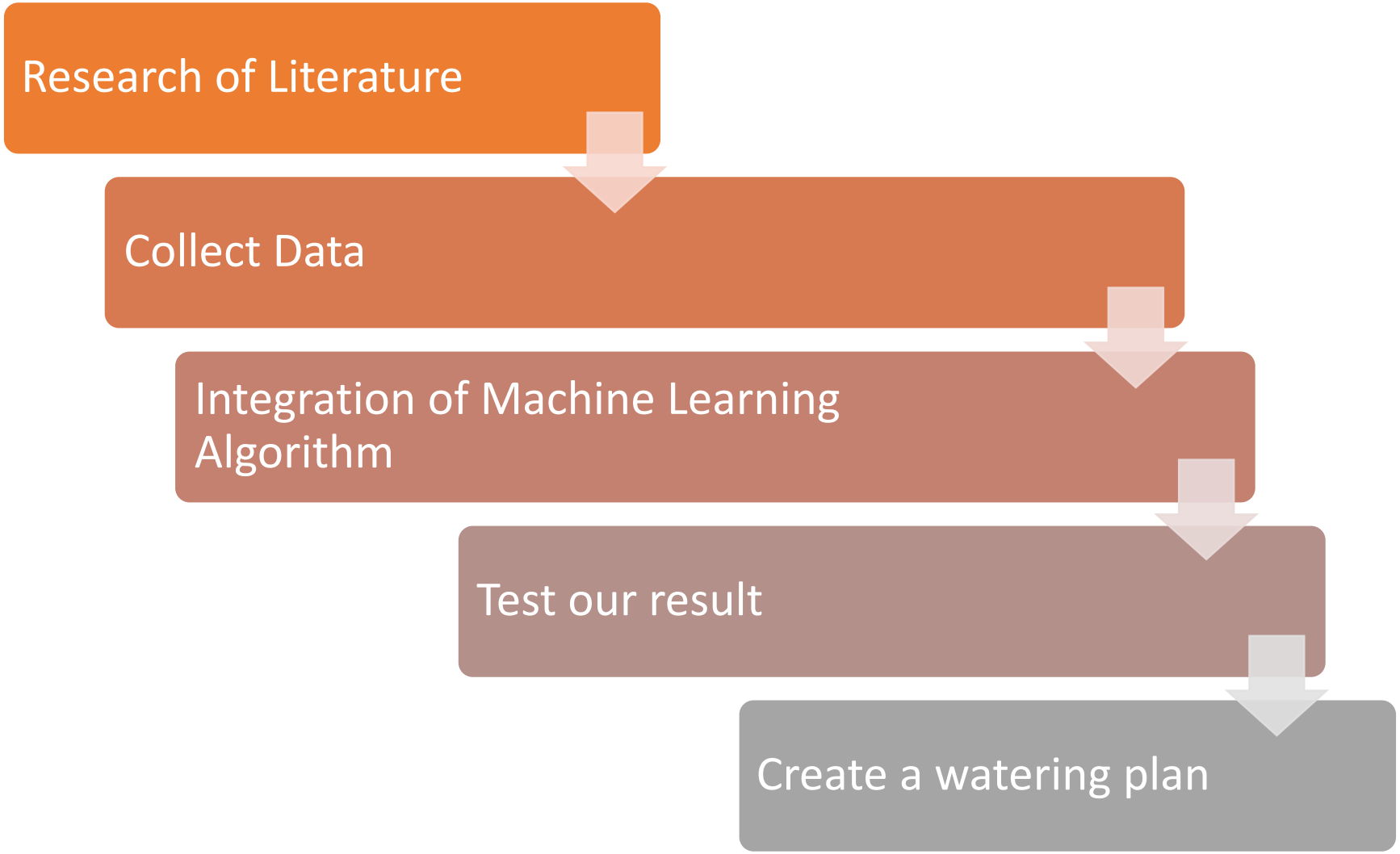
Adrien Chabert

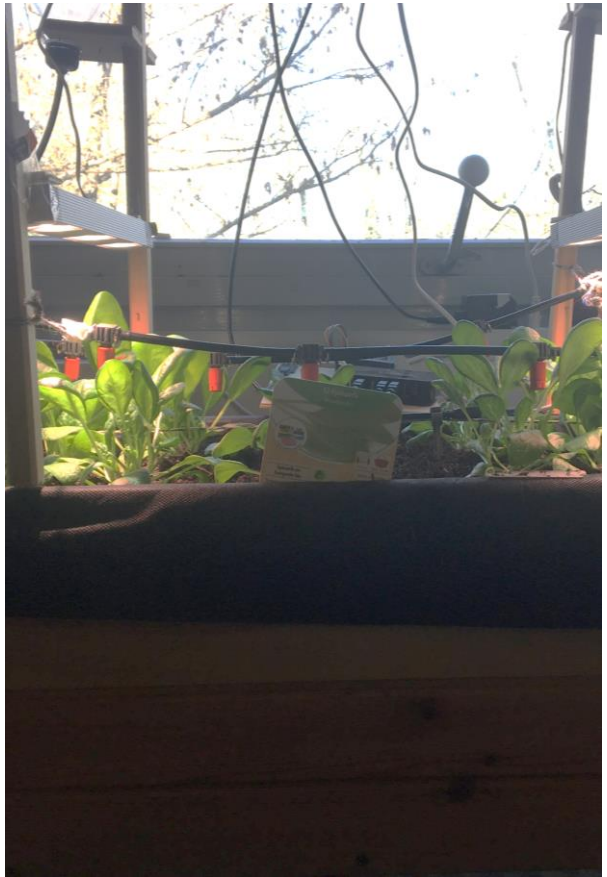
Motivation

To predict water quantity necessary for a specific plant for it to remain in its confort zone

200’000 km^3 of fresh water



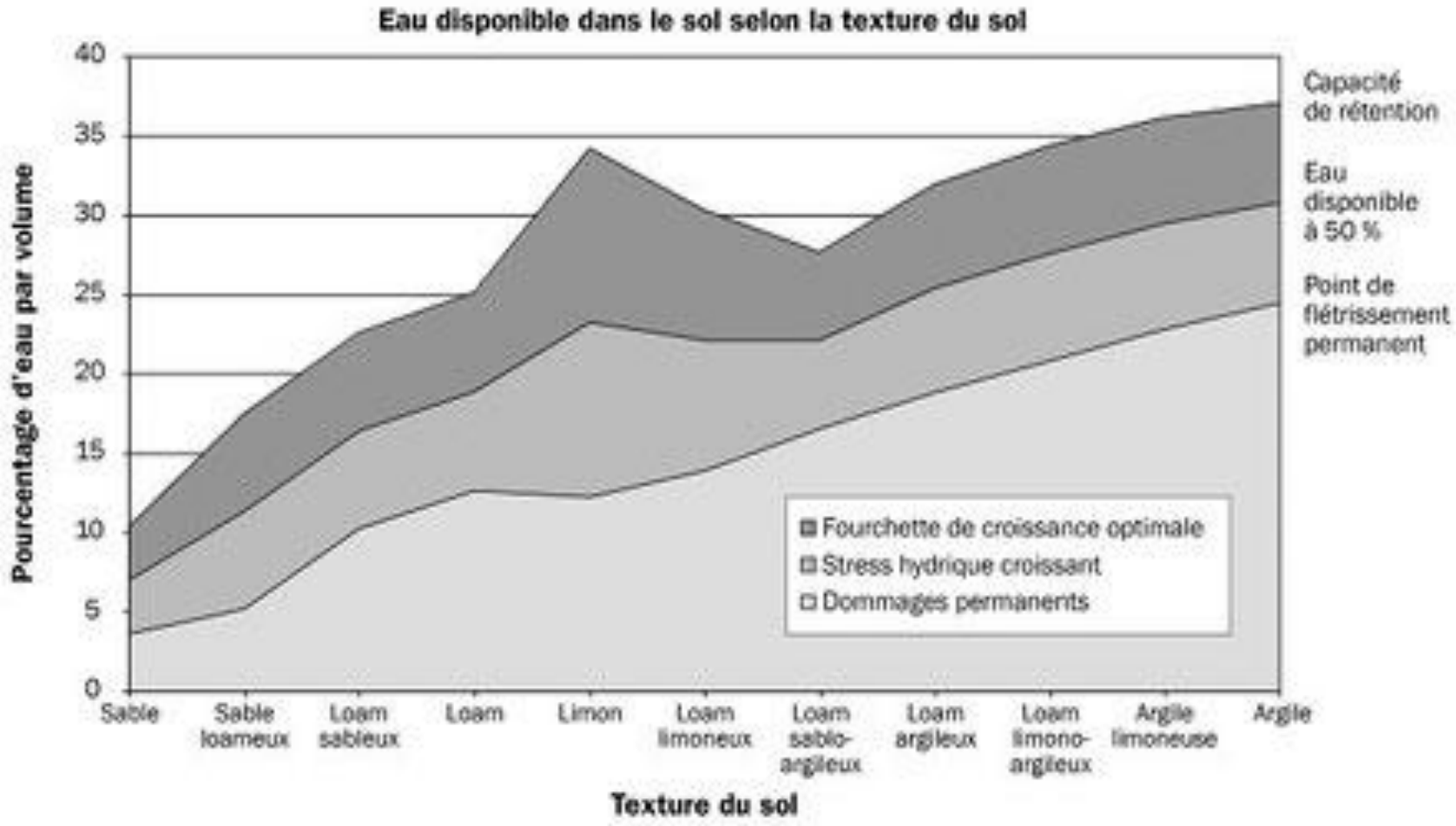

Research of Literature
Collect Data
Integration of Machine Learning Algorithm
Test our result
Create a watering plan



Planting

Basilic, onion, spinach

Optimal soil Moisture depending of the soil



Source : https://www.capteurs-et-mesures-agralis.com/mesure-humidite-sol/

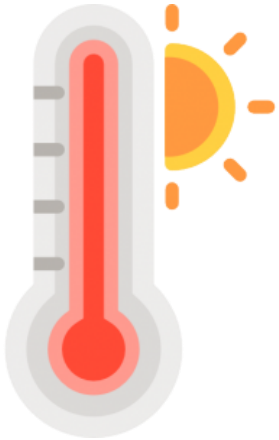

chronograf

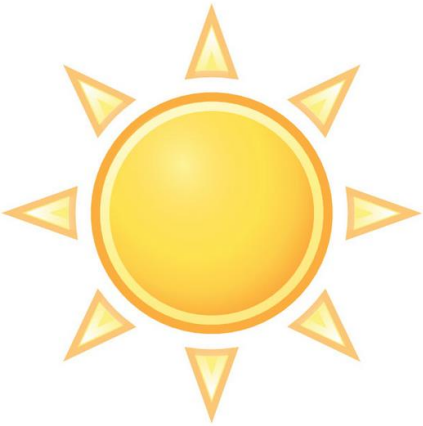

scikit
learn


influxdata

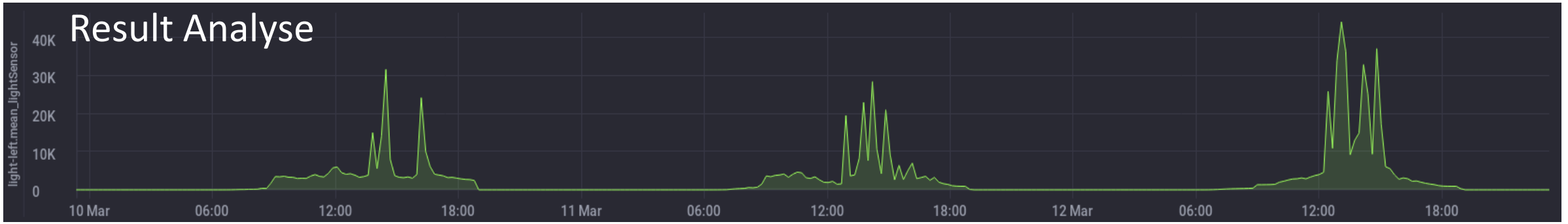

pandas
$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$


jupyter

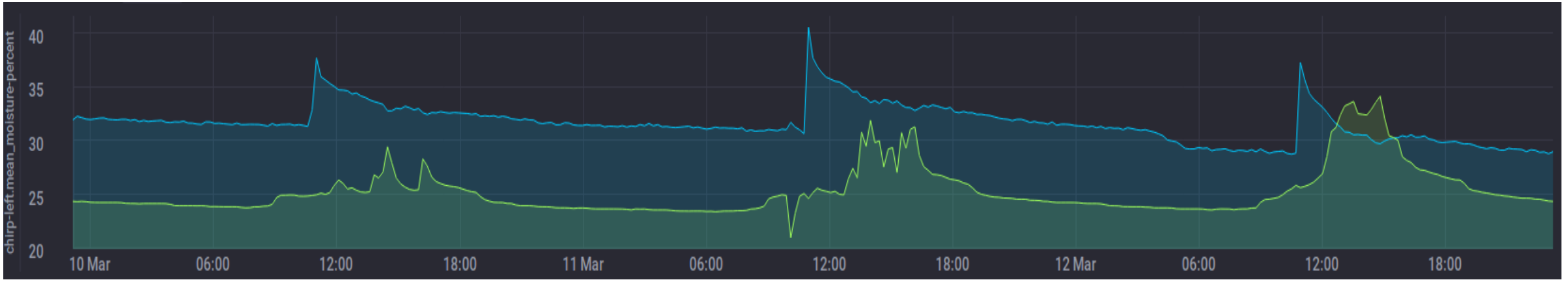




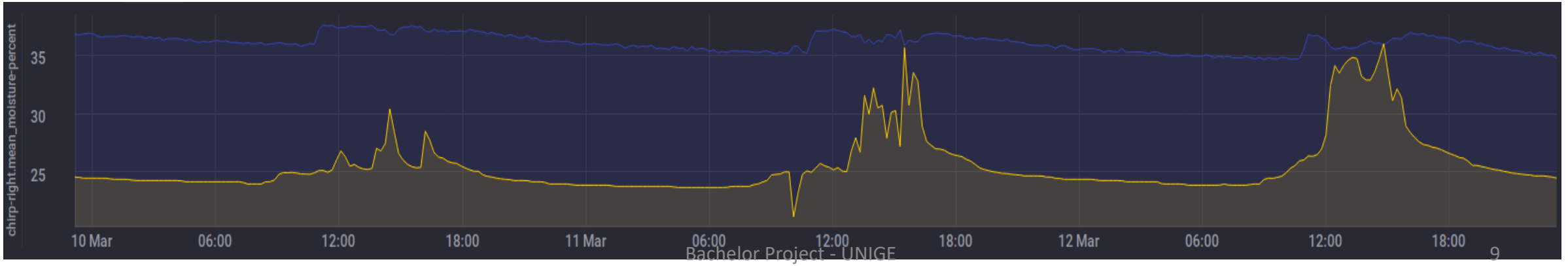
Result Analyse



Demeter.autogen chirp-left : Moisture percent and temperature



Demeter.autogen chirp-right : Moisture percent and temperature



Encountered problem

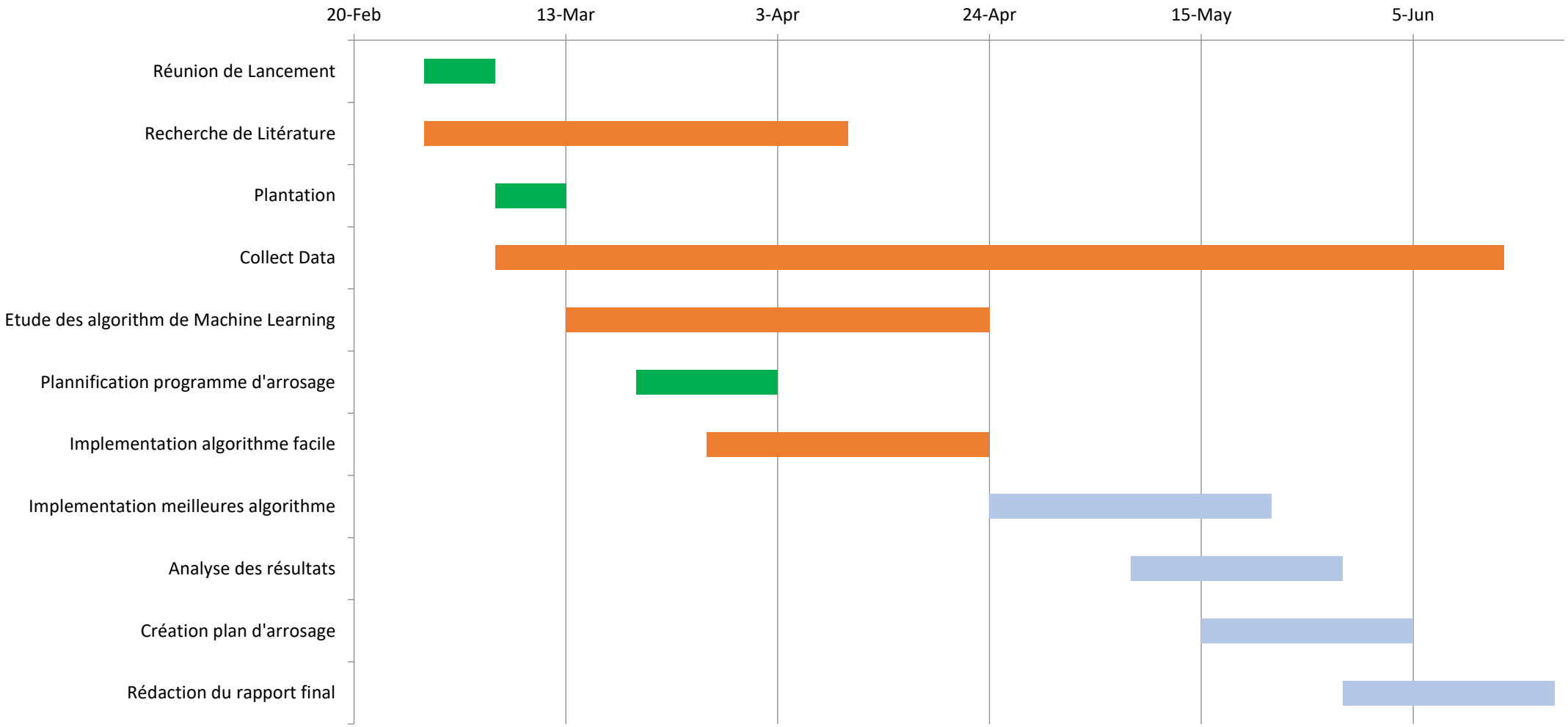
- Position of the humidity sensor
- Weird curve
- Not found comparable experience in indoor small scale

Planning for the next 3 weeks

- End of the research of Literature
- Research about Machine Learning algorithm
- Implementation of a first easy ML algorithm
  - Bayesian learning machine approach for Regression
  - Least Squares Multiple Linear Regression

- Vary the watering with respect of the plants

Project Planning



Watering Plan

Date	Ceres	Demeter	Autre
6-Mar	10 s/j	10 s/j	
13-Mar	10 s/j	10 s/j	
20-Mar	10 s/j	10 s/j	
27-Mar	20 s/j	15 s/j	
3-Apr	20 s/j	15 s/j	Full watering
10-Apr	50 s/2j	30 s/2j	
17-Apr	30 s/j	10 s/j	
24-Apr	30 s/j	10 s/j	
1-May	40 s/j	20 s/2j	Full watering
8-May	20 s/0.5j	20 s/j	
15-May			
22-May			Full watering
29-May			
5-Jun			Full watering
12-Jun			
19-Jun			Full watering
26-Jun			
3-Jul			
10-Jul			