

# AGRICOLA MODERNA

# A VERTICAL FARM MADE IN ITALY

WE WANT TO CONTRIBUTE TO THE TRANSITION TO A MORE SUSTAINABLE AGRICULTURE BY GROWING FRESH AND HEALTHY CROPS, WHICH ARE BETTER FOR THE PLANET AND ITS PEOPLE



# OUR JOURNEY



## 2018

Research laboratory in the center of Milan



## 2019

Moved to Melzo, just outside Milan, where our production plant is located.



## 2020

January 2020 we started offering our fresh vegetables to the public in supermarkets in Milan.



## 2021

Started development of a new 1 ha fully automated facility. Operations 2022

# VERTICAL FARMING

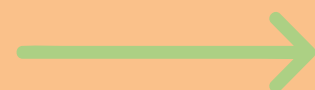
## A REVOLUTION IN PLANT PRODUCTION



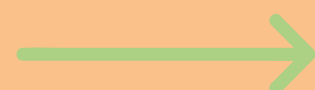
LIGHT SPECTRUM



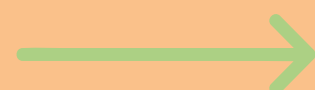
ENVIRONMENT



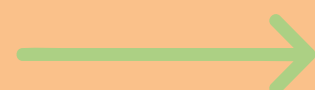
SUBSTRATE



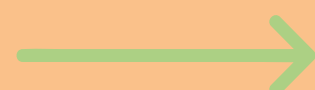
NUTRITION



SEED QUALITY



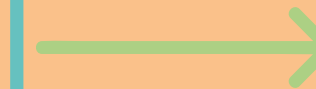
WATER



CO2



YIELD



METABOLITES



TASTE/BITTERNESS



VITAMINS/ANTIOXYDANT



TEXTURE/SHAPE



COLOUR



SHELF LIFE



VERTICAL FARMING ENABLES YOU TO **SYSTEMATICALLY OPTIMISE**  
ALL AGRONOMICAL INPUT CONDITIONS

AGRICOLA  
MODERNA



# MILANO PILOT FARM

Surface: 1500m<sup>2</sup>



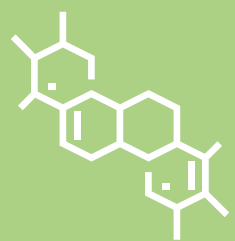
Production:  
2,000 kg per month



MODERNA

WE PROVIDE A PREMIUM PRODUCT, ACCESSIBLE TO EVERYONE

FRESHER,  
HEALTHIER,  
TASTIER



More vitamins  
& antioxidants



Pesticide  
free



Better  
taste



Nickel  
free



Longer  
shelf life



hydrofarm  
its vltimer cc





# ITALY COMMERCIAL FARM

Surface growing : 11,000 m<sup>2</sup>



Investment: 12 Million



Production: 25,000 punnets/day



Electricity consumption: 15 GWh/year



Target Market: North Italy

# VERTICAL FARMING

## A REVOLUTION IN PLANT PRODUCTION

A perfect context for a quantitative and systematic approach



Indoor closed environment



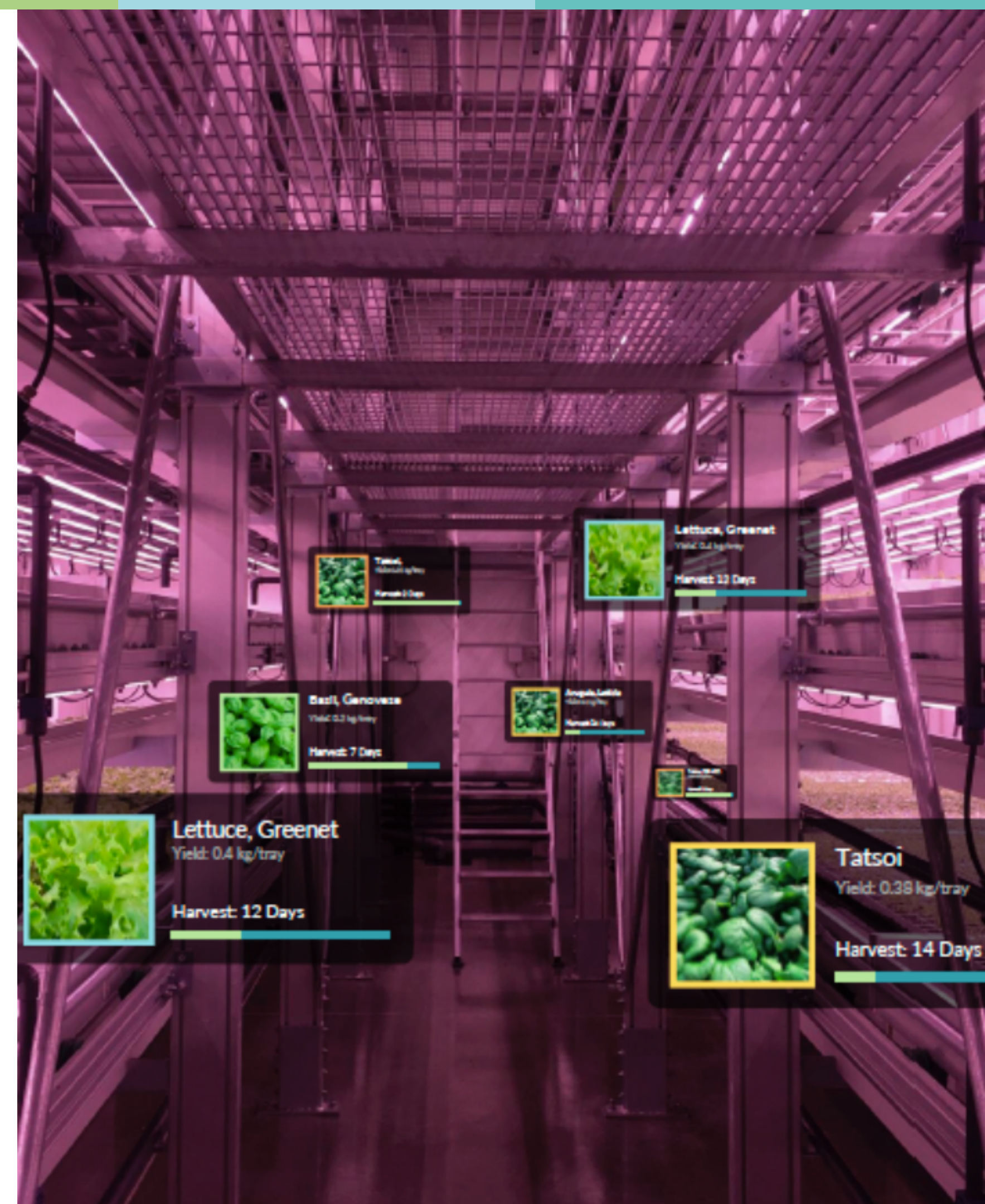
Total control on environmental conditions (C°, light, humidity, CO2, air velocity)



Stable and repetitive process



Relatively cheap and stationary Sensors



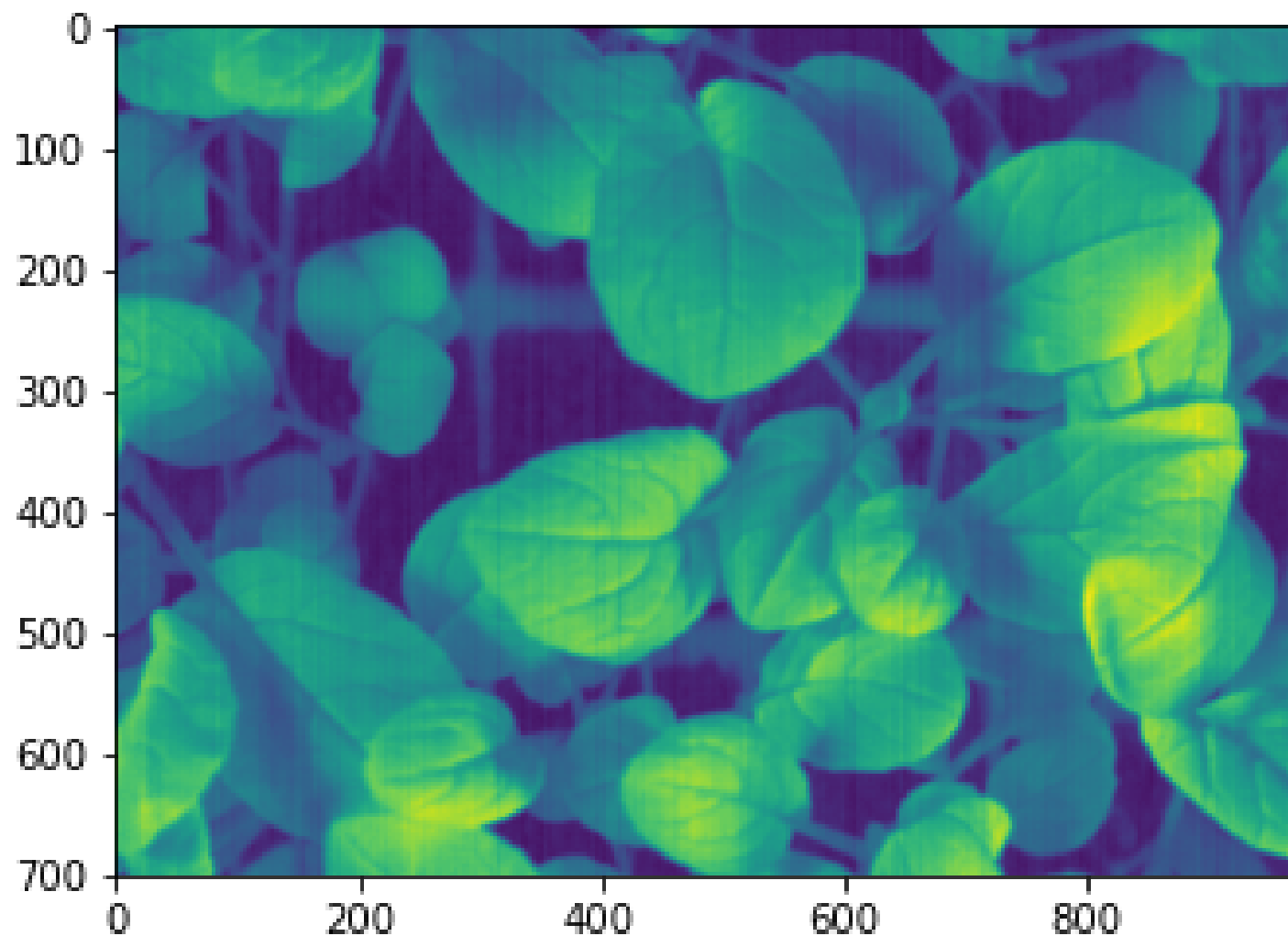
# PHENOTYPING PLATFORM

## DATA COLLECTION / AI & DEEP LEARNING

Using deep learning and imaging techniques, we can monitor plant growth real-time and optimise growth.

### VISION MONITORING

We use Hyperspectral and RGB-D cameras to acquire images of our crops

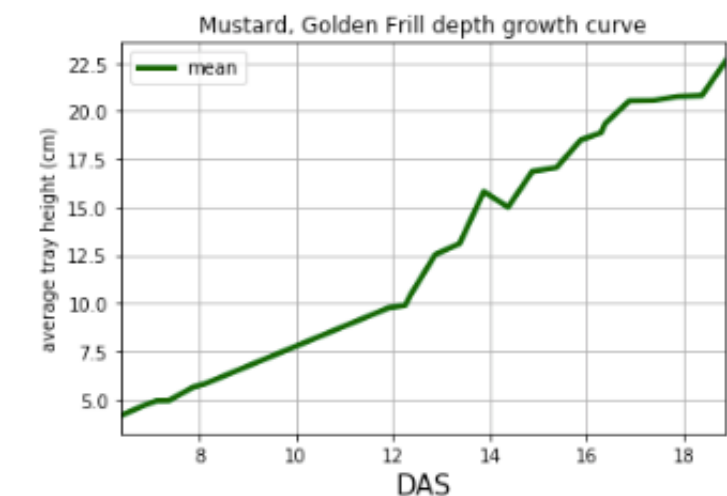


### SEGMENTATION & PHENOTYPING ALGORITHMS

- LEAF DETECTION (SEGMENTATION)
- PHENOTYPING (SIZE, WEIGHT, etc...)
- PLANT MORPHOLOGY (RGB-D)
- CHEMICAL COMPOSITION (HYPER-S)

## DATA ANALYSIS & PREDICTION

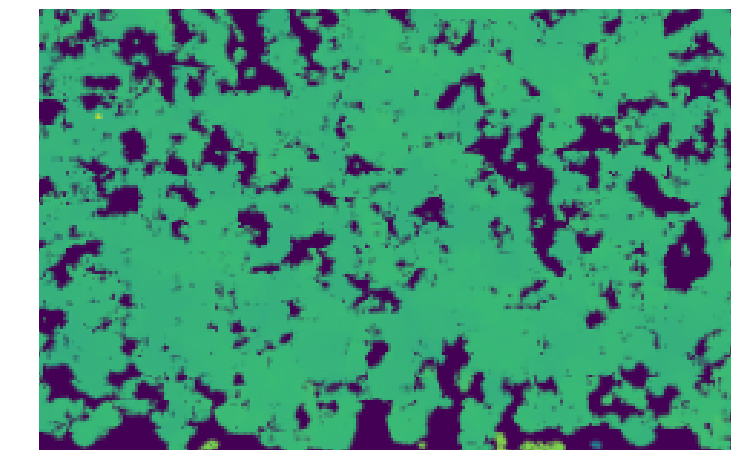
We use analysed data to monitor growth curves, growth anomalies and stress detection



- GROWTH CURVES



- STRESS DETECTION



- ANOMALY DETECTION

**AGRICOLA  
MODERNA**

**THANK YOU**

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