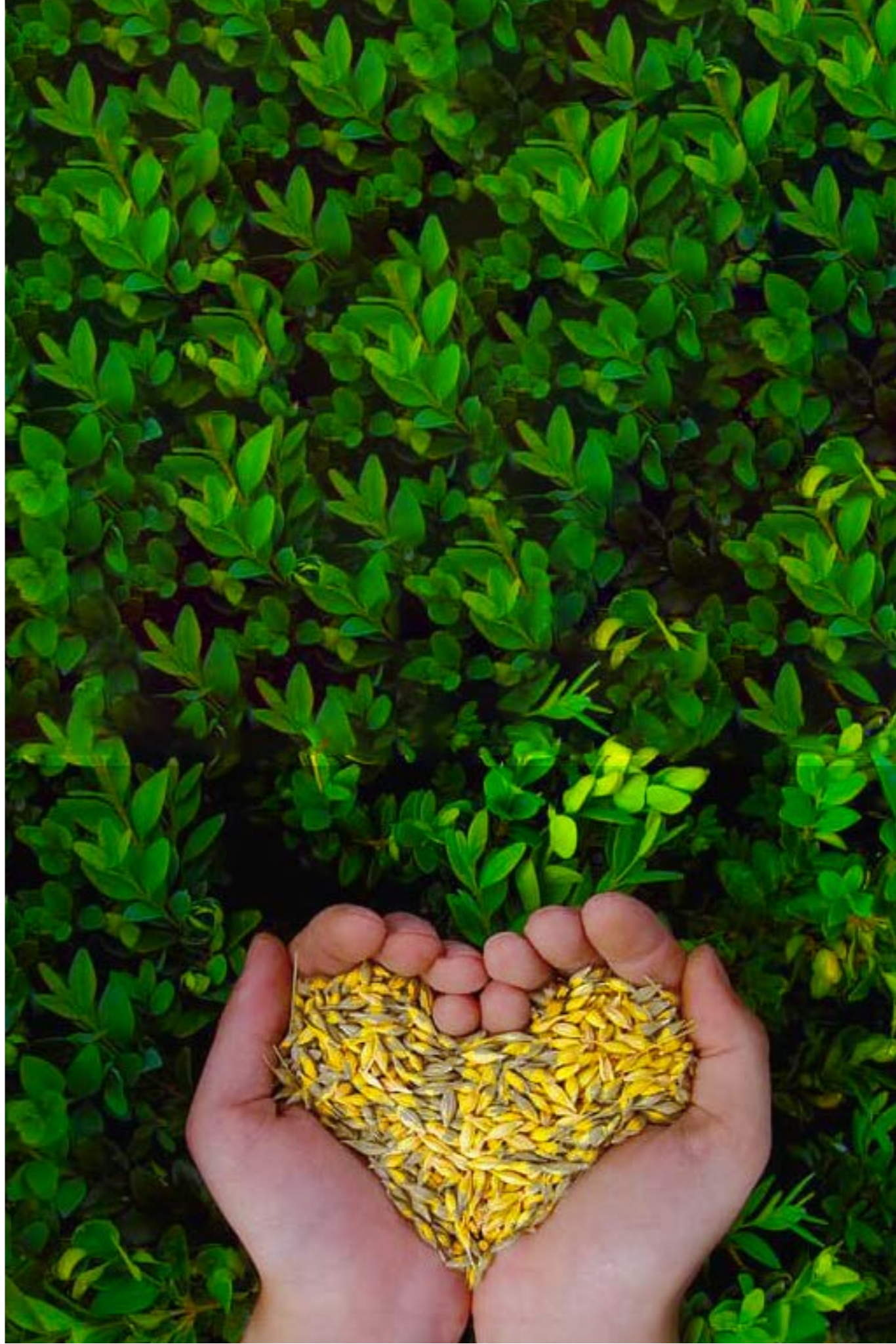# Agriculture, Gardening and Ubiquitous

INDEX

INTRODUCTION

As in others field, the technologies of ubiquitous computing are applied to the agriculture.
This application has the goal to **SIMPLIFY** the work and make it **SMARTER**.

Ecosustainability

THIS IS ONE OF THE MAIN REASON THAT UBIQUITOUS COMPUTING IS APPLIED TO AGRICULTURE: TO **REDUCE** WASTE OF WATER, RESOURCES AND **IMPROVE** THE PLANT GROWTH AND RENEWABLE ENERGIES.
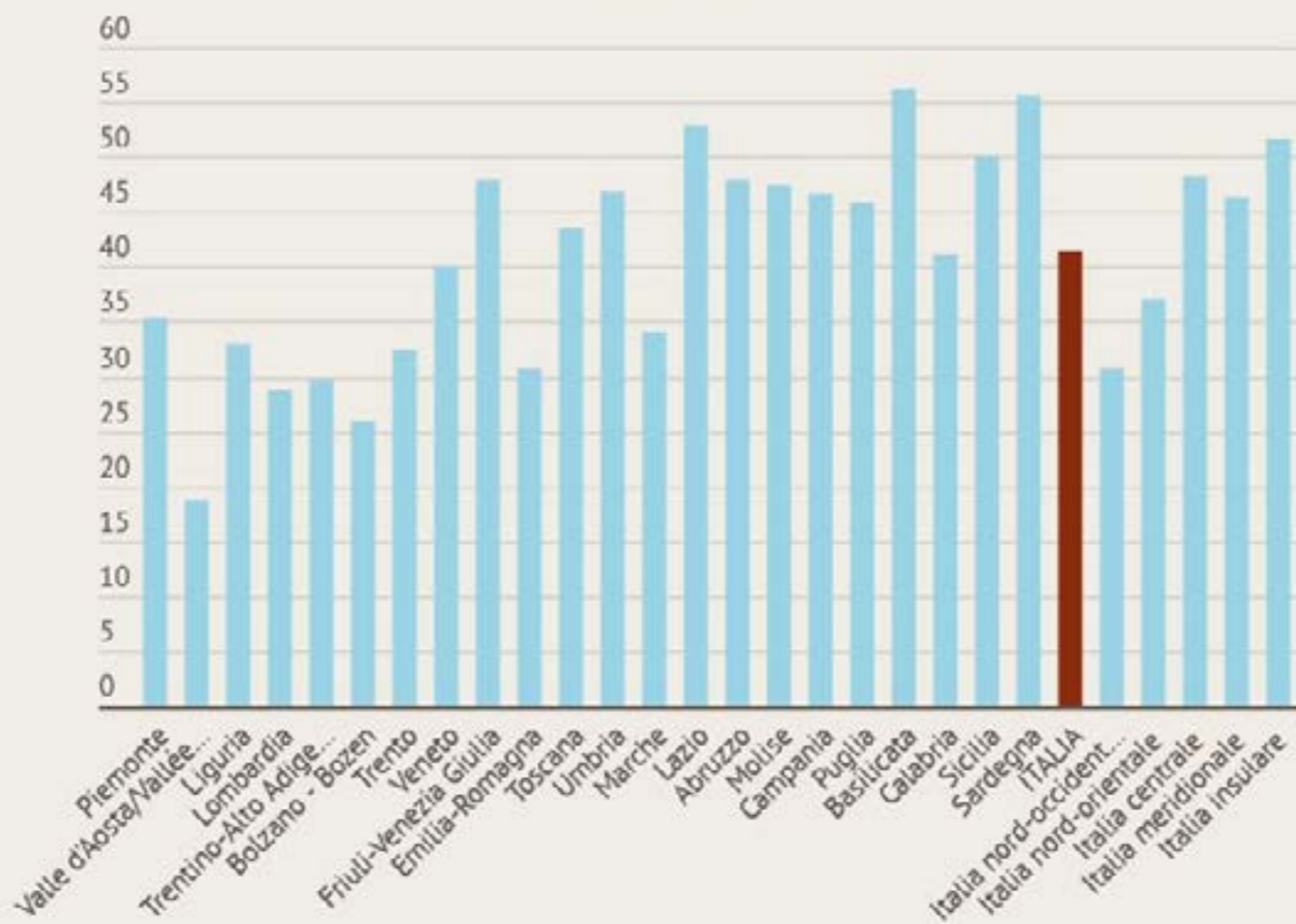
WASTE OF WATER

IT IS AN IMPORTANT **PROBLEM** THAT WE HAVE TO SOLVE RIGHT NOW.
WITHIN 2050 WE WILL SEE DROUGT INCREASE AND RAINS DECREASE BY 20%.

% di ACQUA EROGATA E PERSA nel 2015
Fonte: Istat

52% OF WATER IS USED FOR AGRICULTURE. DESPITE THE USE IN THIS CASE IS ADDRESSED TO NATURE, WE HAVE TO MINIMIZE THE USE OF WATER.

SMART AGRICULTURE

IT PROVES ITS VIABILITY FOR THE BETTER MANAGEMENT OF AGRICULTURAL REQUIREMENTS. A WAY TO CONTROL CULTIVATIONS AND HELPING THE PROCESSES, FOLLOWING THE IDEAS OF SUSTEINABILITY.

S SPECIFIC

M MEASURABLE

A ATTAINABLE

R RELEVANT

T TIME-BASED

Ongoing projects and entities

ORTI GENERALI

AN EXPERIMENT ABOUT TECHNOLOGY SUPPLYING ENVIRONMENT. THIS PROJECT USES IN THE FIELDS A CONTROL UNIT THAT DETECTS WEATHER, HUMIDITY, LOCAL TEMPERATURE AND ACTIVATES A CENTRALIZED IRRIGATION SYSTEM FOR ALL GARDENS.

EKRUCAMI

PROJECT FINANCED BY THE EUROPEAN UNION AND KOREA, THE GOAL IS TO ADVANCE THE ENVIRONMENTAL INTELLIGENCE IN BRAND NEW WAYS. THEY ENCOURAGE OTHER COUNTRY TO JOIN THIS CAMPAIGN.

EKRUCAMI
UBIQUITOUS COMPUTING AND AMBIENT INTELLIGENCE

CAAO

CONTEXT-AWARE AGRICULTURE ORGANIZER WAS PURSUED BY THIS STUDY, FACILITATES FARMERS WORK BY PROVIDING RELEVANT CONTEXTUAL INFORMATION TO THE USERS, THUS SIMPLIFYING THE SELECTION OF PLANTS AND RESULTING TO BETTER HARVEST AND MORE EFFECTIVE RESOURCE USAGE.

HOME AUTOMATION TECHNOLOGIES

In the field of home automation technologies many companies are engaging in creating smart solutions for the users. At the moment, we have only one kind of smart greenhouse on the market.

It works using a **HYDROPONIC CULTURE**, it means that all the plants grow out of the ground. This kind of practice allows to reduce water consumption and greens can grow up faster.

LINFA

A GREAT EXAMPLE OF A HYDROPONIC GREENHOUSE IS THE ITALIAN ONE "**LINFA**". THE GREENHOUSE ITSELF WORKS USING A CLOUD SYSTEM THAT ALLOWS TO CONTROL ALL THE ASPECTS. IT IS SIMPLE TO USE, AFTER PUT INSIDE A SEED YOU HAVE ONLY TO CONNECT THE GREENHOUSE TO THE WIFI USING AN APP ON YOUR PHONE.

THE APPLICATION IS QUITE SIMPLE, THE GREENHOUSE'S STATUS IS VERIFIED BY SOME COLORFUL RINGS. THE GREEN ONE TELLS THE USER THAT IS ALL OK. THE RED ONE ANNOUNCES PROBLEMS. THERE IS ALSO A SECTION WHERE THE USER CAN BUY ALL THE SEEDS ON THE ONLINE MARKET OF THE COMPANY. THE GREENHOUSE CAN BE ACTIVATE AND DISABLE IN EVERY MOMENT, THIS ACTION LEADS THE SHUTDOWN OF THE LIGHTS THAT HELP THE GROWTH. USER CAN CONTROL HIS SMART GREENHOUSE AT ANYTIME, AND THE APPLICATION GIVES THE CHANCE TO CONTROL SEVERAL DEVICES AT THE SAME TIME.

https://www.youtube.com/watch?v=amOk0k9Tq7w

There are several advantages that new technologies can bring in all areas of agriculture from production, to transformation, from sale to the final consumer. The aim is to achieve important goals related to sustainability and awareness.

MARKET PRODUCTS

INTELGREENHOUSE

SABA TECHNOLOGY, A SICILIAN START-UP, WHICH - AS PART OF THE INTELGREENHOUSE PROJECT (THE INTELLIGENT GREENHOUSE) - HAS CREATED THE "EASY DROP" SYSTEM CAPABLE, IN ELEVEN HOURS OF ACTIVITY, OF PRODUCING 35 LITERS OF WATER, OBTAINED FROM HUMIDITY PRESENT IN THE ATMOSPHERE.

IntelGreenhouse
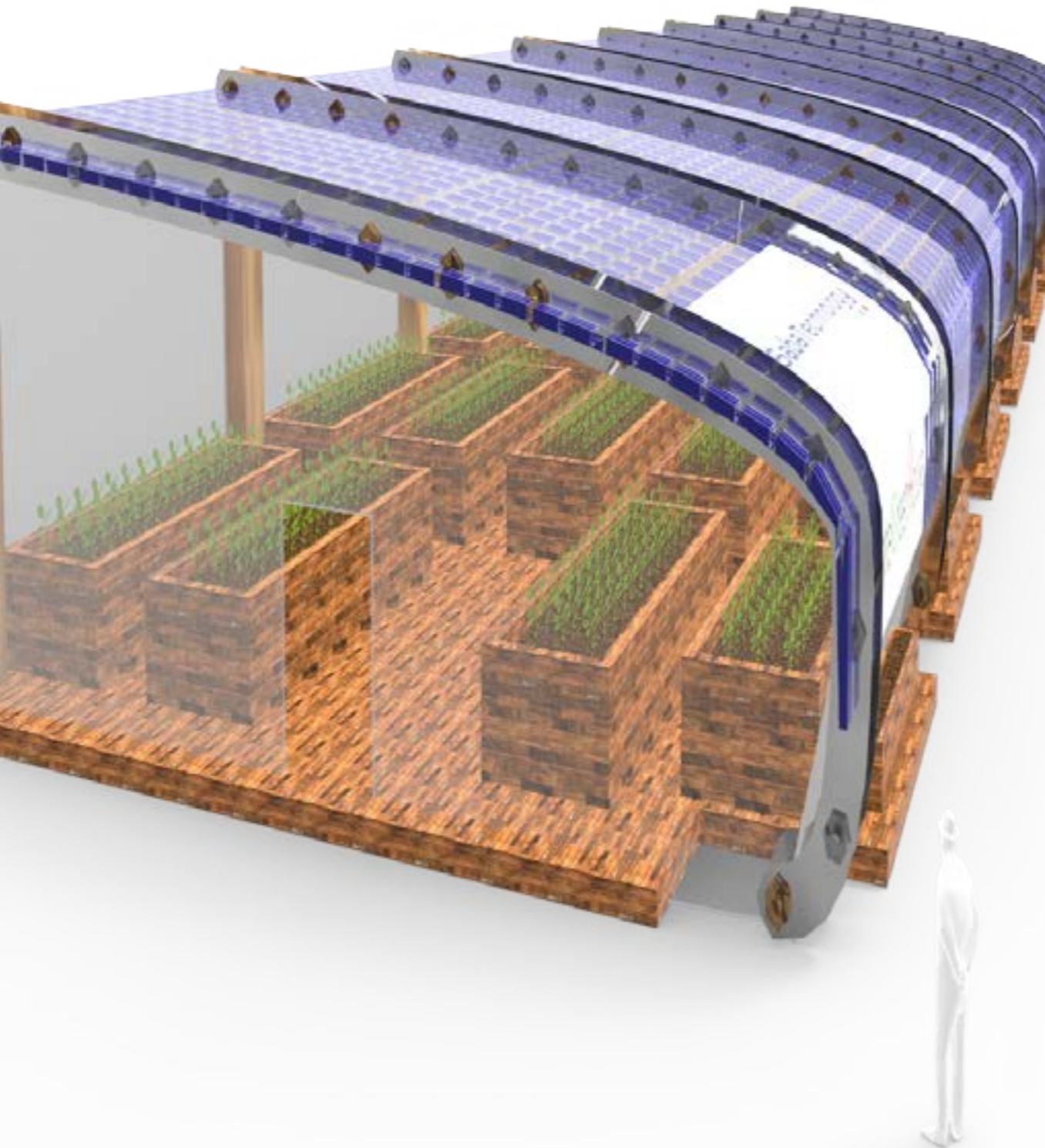
A FUTURISTIC GREENHOUSE THAT IS AN HIGHLY TECHNOLOGICAL PRODUCT AND A CONDENSATION OF PURE INNOVATION IN THE FIELD OF CROPS

IntelGreenhouse WILL PRODUCE **ENERGY** (THANKS TO THE TRANSPARENT SILICON SHEET), **WATER** (WITH THE EASY DROP SYSTEM) AND WILL BE EQUIPPED WITH **LED LAMPS** THAT WILL REPRODUCE THE NATURAL LIGHT OF THE DAY IN ORDER TO ACCELERATE THE PHOTOSYNTHESIS PROCESS.

Cool Farm

CoolFarm optimizes production thanks to Artificial Intelligence.

Through the CoolFarm digital cloud panel, farmers will have the opportunity to access all the data relating to their greenhouse at any time of the day. They can also analyze and compare all the data of the various greenhouses owned by the them.
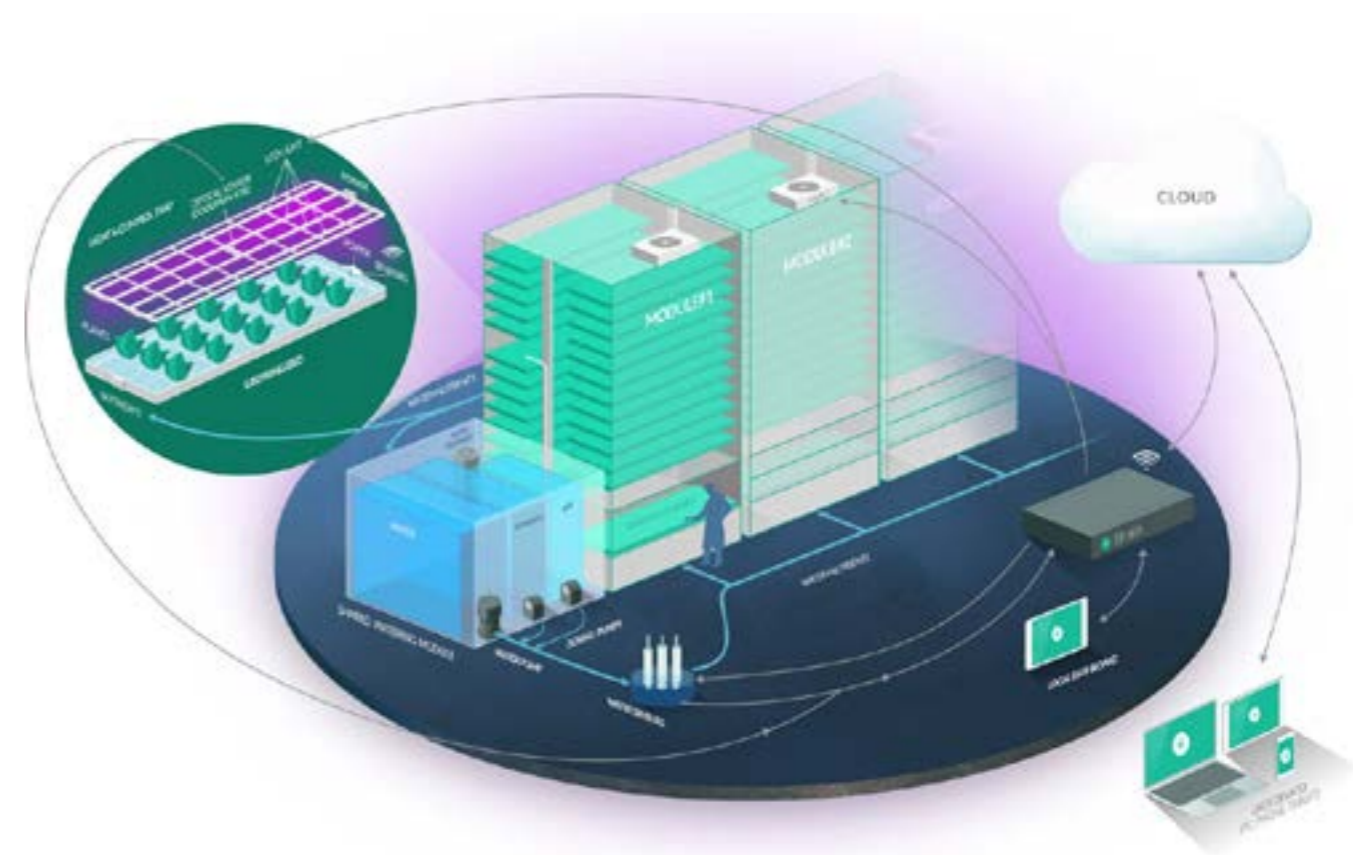
Case Study: Tomato[+]

Tomato⁺

The Tomato+ indoor greenhouse was designed in Italy by a team that has been able to combine in an innovative way botany, agronomy, LED lighting and software design.

Depending on the model, Tomato + has two or four independent shelves inside, individually programmable to guarantee the ideal conditions for the simultaneous growth of crops with different needs.

Tomato⁺

The seeds are contained in practical compostable **pods**: they are made of biodegradable and compostable materials.

Tomato⁺

There are several models: the customer can choose the number of shelves and the color of the greenhouses.

The two shelves greenhouse is named "Horto2", the one with four shelves the "Horto4"

Tomato[+]

There is another model which is pretty complex: it is **Horto Professional**, an industrial cultivation system that allows you to automatically grow up to 24,000 pods.

No insecticides, fungicides or herbicides are used. The amount of water needed is up to 90% lower than traditional cultivation techniques.

TOMATO⁺

MICHELE IS AN ADVANCED SOFTWARE WHI-CH REPRESENTS THE BRAIN OF TOMATO+ IT DEALS WITH **PLANT NUTRITION** AND **CONDITIONS** OF **HUMIDITY** AND **TEMPERA-TURE**. IN THIS WAY DIFFERENT CROPS CAN GROW OPTIMALLY

Future developments and Conclusions

RuralHack

A great example is **RuralHack**, a project created due to the needs of joung farmers. RuralHack is a reality that combines social innovation with quality agriculture to bring together people and rural reality in harmony with the tools of digital innovation. They try to achieve goals with the help of digital technologies 4.0 in the field of agriculture.

New In

Lg at the **CES** of Las Vegas has just presented his new home garden, the "Column Garden".

It is a new home automation solution with innovative sensors that help the control. It is based on an indoor culture and its ideal location is in the kitchen because it is a household appliance. This technology replies with flexible modules the cycles of the days. Currently is not possible to buy it but it is definitely the first signal of the awareness of the companies.

Conclusions

It is important to say that this field is growing day by day, companies are more and more interested in creating smart solutions to improve usability and to reach a new slice of the global market.

Thank you for your attention!

Abate Martina

Maspero Elisa

Larovere Francesca

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