The National Institute of Research – Development for Machines and Installations Designed for Agriculture and Food Industry – INMA Bucharest

METROFOOD-RO final Conference

METRO FOOD
INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

14th – 15th November 2023

Our area of expertise envisage **designing and producing experimental machinery for improving agricultural practices, improving soil health and enable a better adaptation to climate change**

Regarding food safety we generally refer to several aspects:

- increasing the quantity of food produced, so as to ensure the needed demand;
- improving the quality of products, so as to cover the need for nutrients,
- to produce in a sustainable manner, so as to preserve as much as possible the characteristics of the soils as they are.

Reversing desertification effects and adapting to climate change

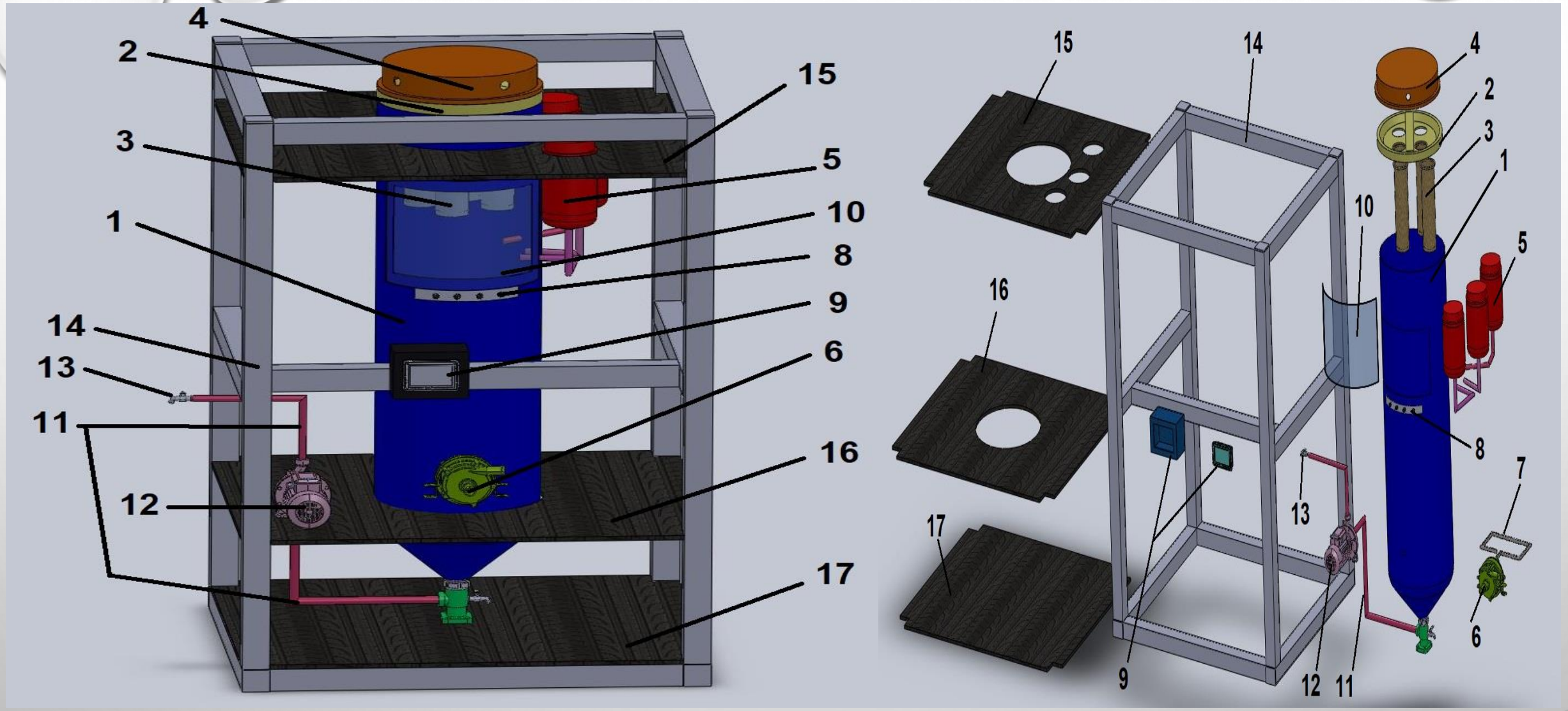
Restoring soil biodiversity and carbon content are crucial aspects of the sustainable management of agricultural land and natural ecosystems.
Soil biodiversity, including the diversity of microorganisms and soil organisms, contributes to the maintenance of soil health, nutrient cycling, and crop productivity.



Microbial enriched solutions + nutrients

Biochar inoculation

Equipment and technologies for increasing soil quality

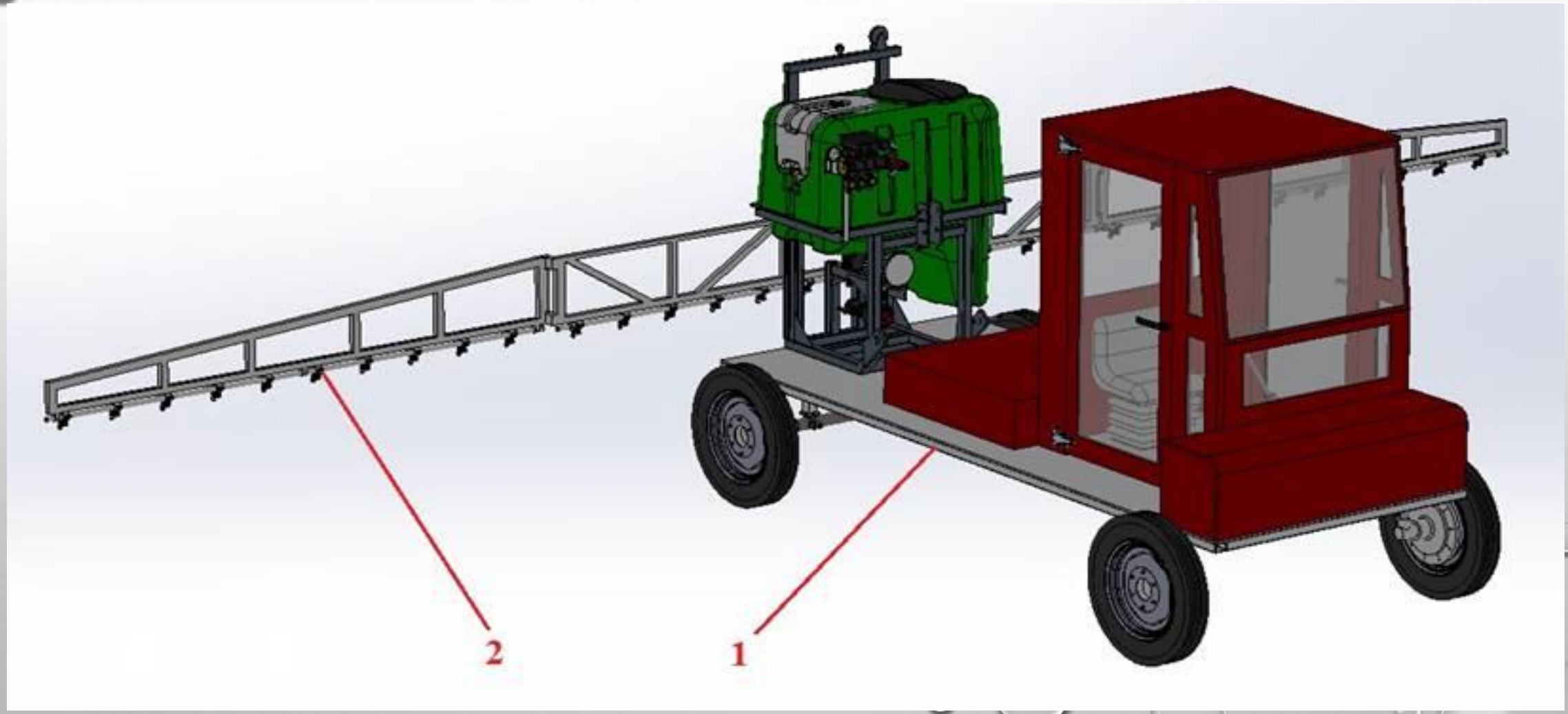


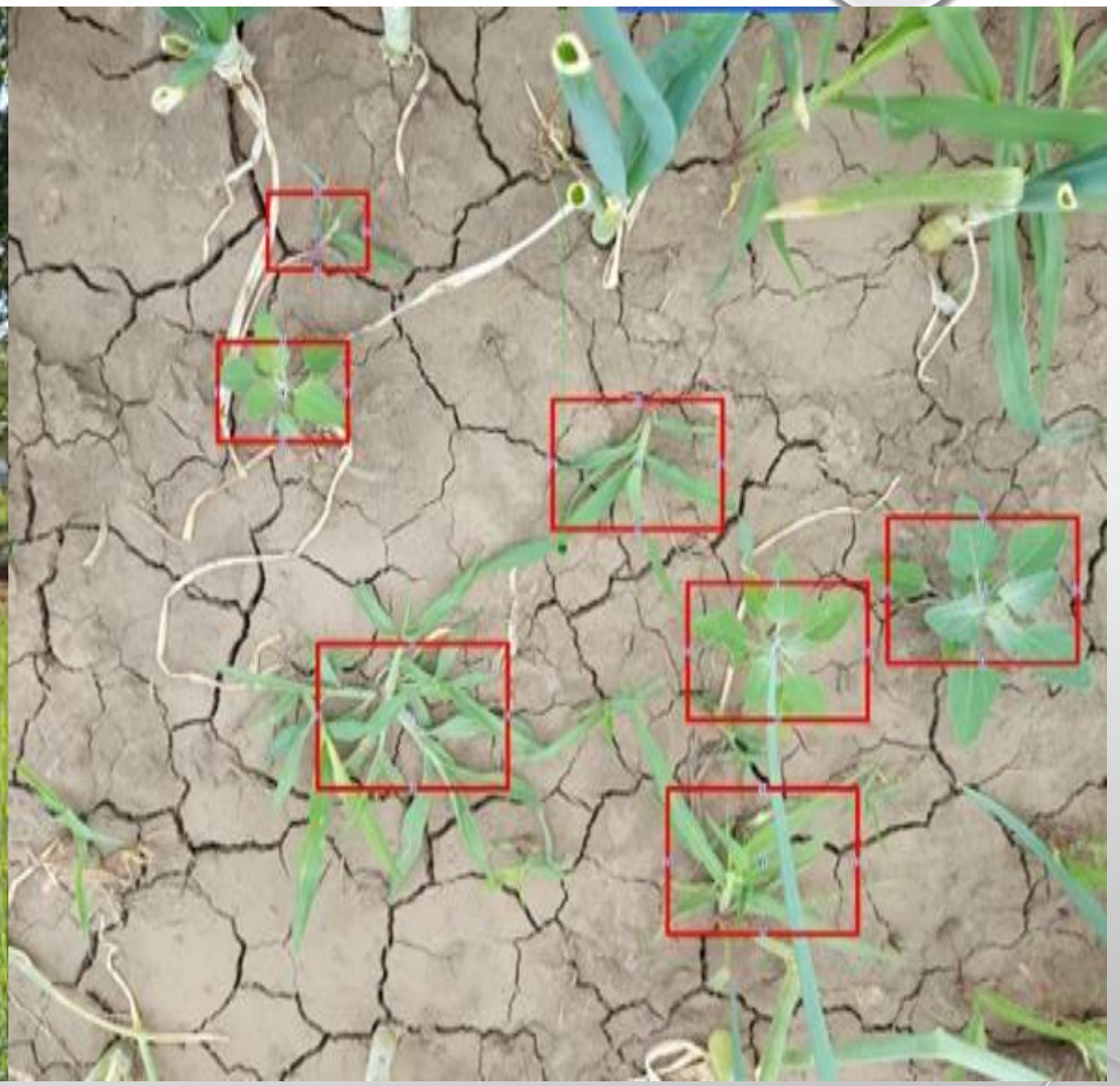
Equipment design for the production of microbiologically enriched fertilizing solutions

Subsoil application of fertilizers enriched with microorganisms

Experimental model for horticultural analysis, prediction and biodynamic action

Electrical equipment intended for the inteligent distribution of phytopathology treatments in agriculture

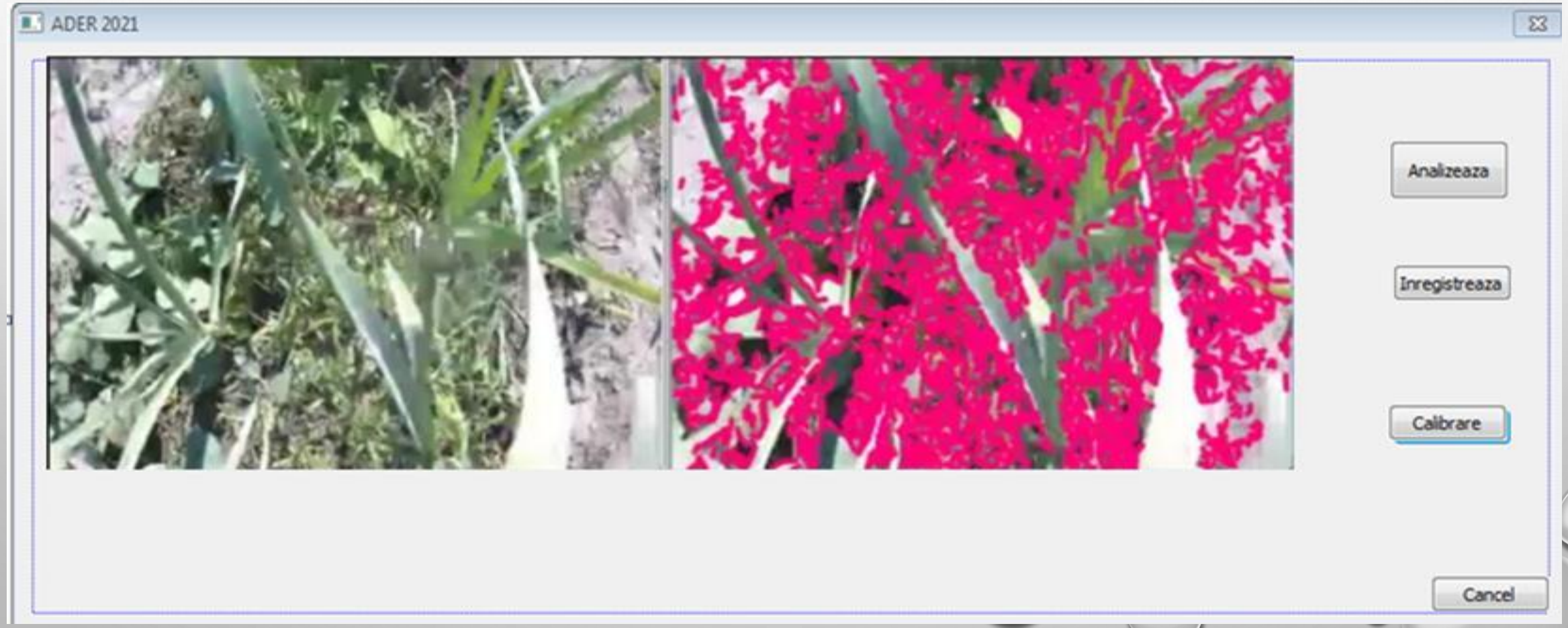


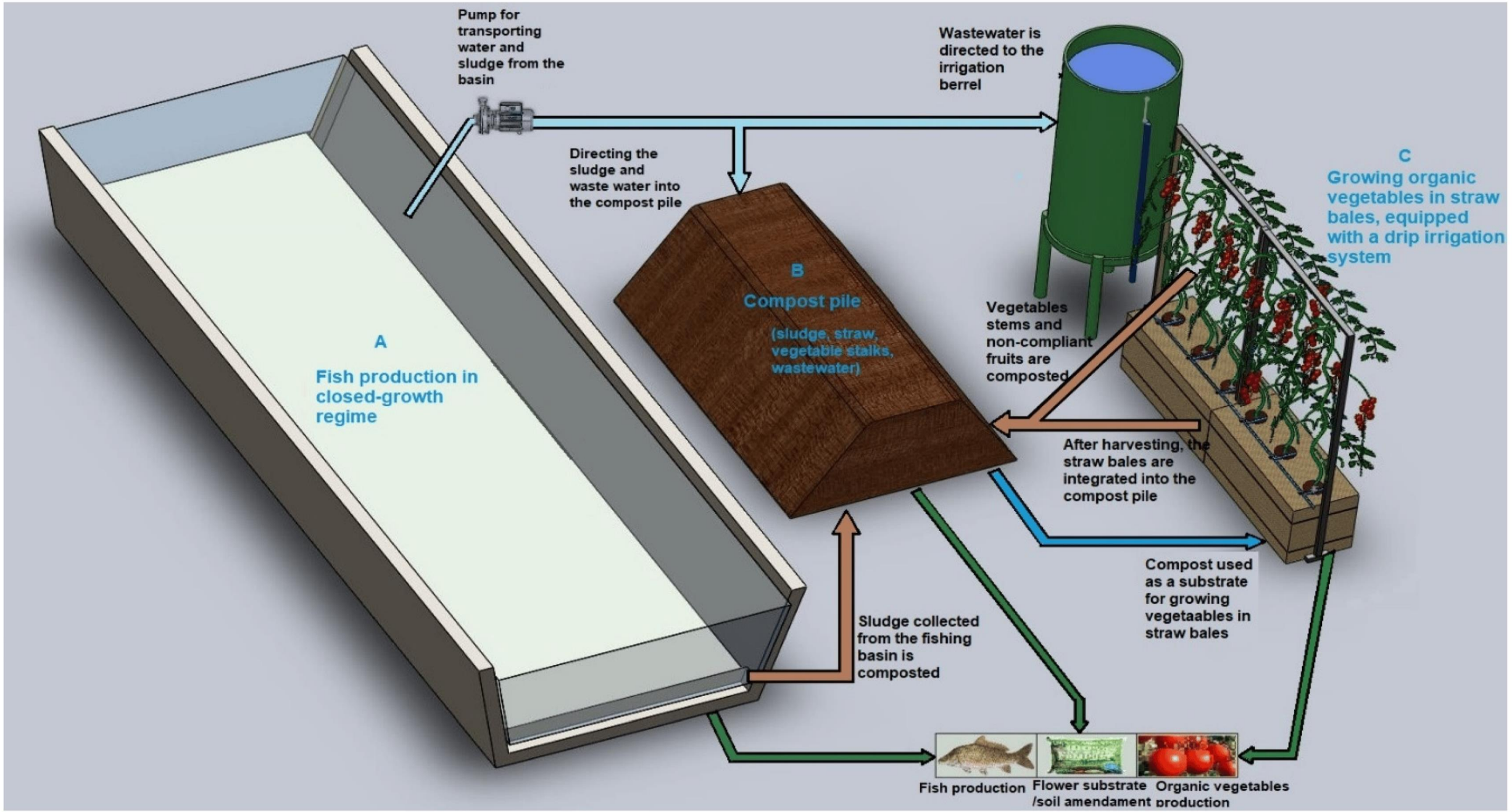


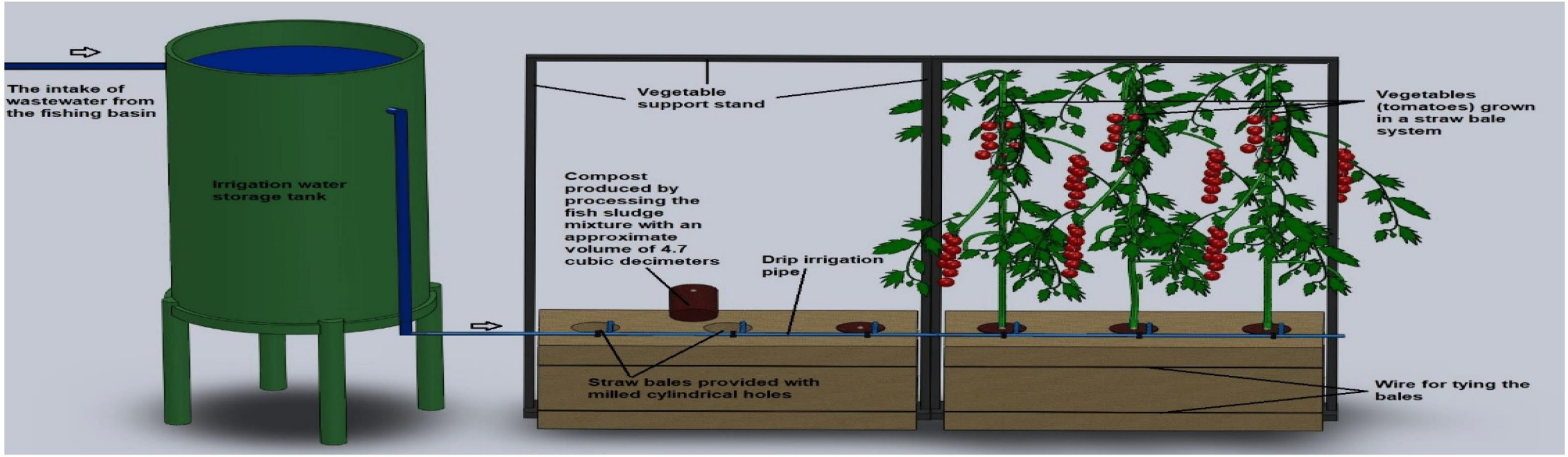
The primary goal is to distribute chemicals in a discriminating manner in order to reduce the amount of pesticides that are sprayed on crops.

The original image acquired by the camera shows a complex scene, where the common color between the plant (leek) and the weeds makes it very difficult to recognize the weeds.

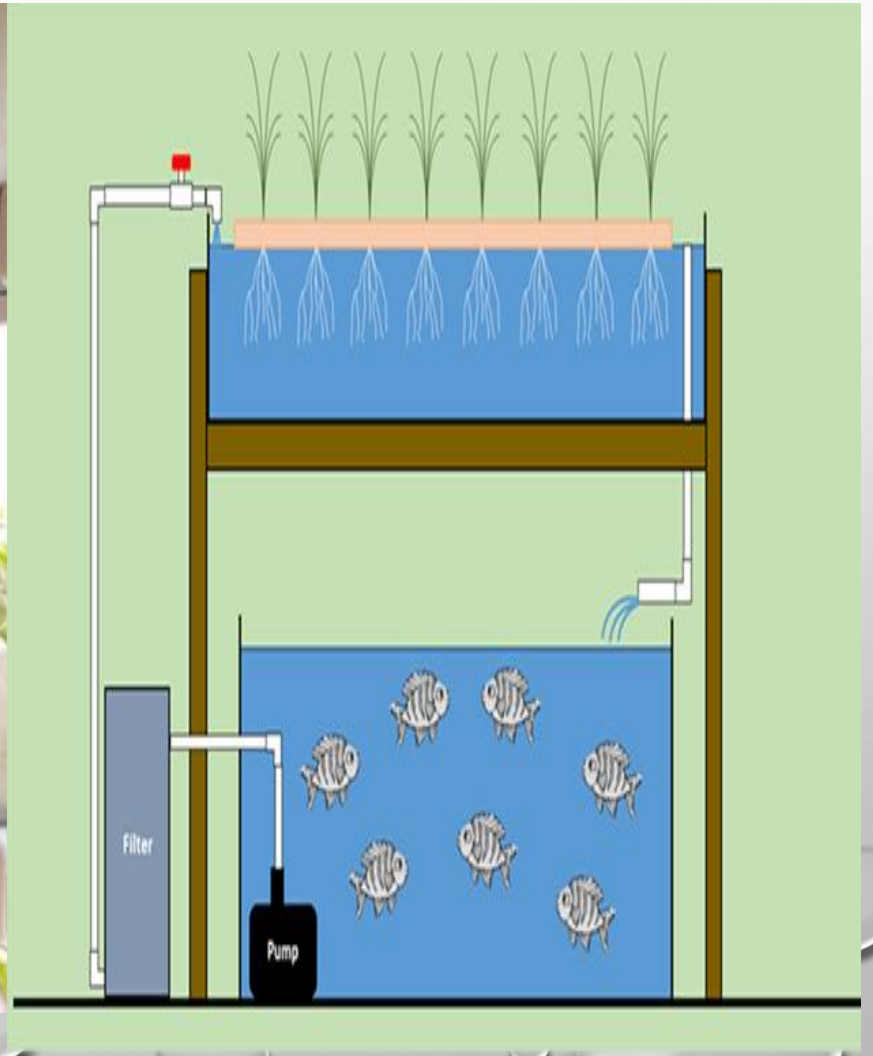
However, the computer vision algorithm based on deep neural networks allows the identification of weed spots with good results.




Pump for transporting water and sludge from the basin
Wastewater is directed to the irrigation berrel
Directing the sludge and waste water into the compost pile
A
Fish production in closed-growth regime
B
Compost pile
(sludge, straw, vegetable stalks, wastewater)
C
Growing organic vegetables in straw bales, equipped with a drip irrigation system
Vegetables stems and non-compliant fruits are composted
After harvesting, the straw bales are integrated into the compost pile
Compost used as a substrate for growing vegetaables in straw bales
Sludge collected from the fishing basin is composted
Fish production
Flower substrate /soil amendament
Organic vegetables production


The intake of wastewater from the fishing basin
Irrigation water storage tank
Vegetable support stand
Vegetables (tomatoes) grown in a straw bale system
Compost produced by processing the fish sludge mixture with an approximate volume of 4.7 cubic decimeters
Drip irrigation pipe
Straw bales provided with milled cylindrical holes
Wire for tying the bales

Aquaponic system that combines fish farming with horticulture



Mapping and carrying out agricultural works using remotely controlled drones

Intelligent systems for monitoring and applying pesticides on agricultural land using drones

Wireless charging of agricultural drones using renewable energy

Installations made for the extraction of volatile oils for the production of bio-pesticides


SCULARIE

Thank you for your attention!