CASE STUDY

Market Garden
In Sweden

Flor.ès.Sens System + 59 Degrees

A SCIENTIFIC EXPERIMENT

What this trial case proves

The more diverse abundant beneficial soil microbiology is, the more productive our crops are. Microbial life is indeed responsible for optimal nutrient cycling to plants, thus optimal plant, crops, and vegetable growth.

What this trial case provides

Direction and a solid offer to the biologic and organic agriculture needs for scalable, yet cheap, solutions for regenerative agricultural systems. A total organic agriculture is indeed reachable, and the door-opening key is at soil microbiological level.

YIELD RESULTS SUMMARY

Highlights - Yield results

Days at field	CROPS (g/m2)	Scenario 1 Control	Scenario 2 Compost	Scenario 3 Microbiological inoculation + Compost	Scenario 3 vs Scenario 1	Scenario 2 vs Scenario 1
64	Rutabaga	1532	1353	2658	73%	-12%
78	Onions	1835	1784	2059	12%	-3%
64	Salad	3083	2236	5773	87%	-27%
70	Swiss Chard	1211	1619	1968	63%	34%
73	Celeriac	1434	1378	3570	149%	-4%
73	Fennel	3421	2791	5416	58%	-18%
92	potatoes	1049	596	1492	42%	-43%
81	Purple Kale	742	326	1680	126%	-56%
	Total	**1925**	**1582**	**3188**	**72%**	-16%

FACTS:

Average increase in yields across 8 crops was

72% in one growing season

All weights shown are displayed in "Edible biomass" in relevance with the crop itself. | Date of monitoring: 17/07/2017 onward.

THE STAKEHOLDERS

Flor.ès.Sens Systems

Located in Geneva, Switzerland, Flor.ès.Sens Systems assessed the relationship between Soil Organic Matter, Soil microbiological web activity and crop productivity while **designing and running this trial**.

59 Degrees

Located in Sweden, 59 Degrees apply the foundations of Dr. E.R. Ingham's professional skills & work to tree systems care, and **provided compost extract for the purpose of this trial**.

Karshamra Mat Och Trädgård

Located south west of Stockholm, Sweden this organic vegetable market producer was suffering low production and crop diseases and was **keen to embark in this non-conventional biological trial to boost crop quality & quantity**.

the problem

Conventional agriculture systems strip the soil of beneficial microbiology and make farmers dependent on synthetic, toxic substances that go against natural processes. Organic vegetable market producers can experience low productivity and crop diseases.

proposed soil-ution

Restore the Soil Food Web and allow *nature's operating system* to:

- ➢ **Kill plant pathogens and protect plants against pests.**
- ➢ **Increase plant available nutrients in the soil, promoting increased growth.**
- ➢ **Build soil structure, so roots can grow deeper and access more nutrients and water.**
- ➢ **Reduce weed pressure by creating biochemical conditions that do not favor them.**

OBJECTIVES

Stop
Stop using inorganic products: toxic chemicals, pesticides, herbicides, fertilizers

Stop
Stop killing soil biology

Stop
Stop pollution of the water-table by toxic runoff/leaching

Remediate
Provide consistent & efficient solutions for total biological & regenerative agriculture

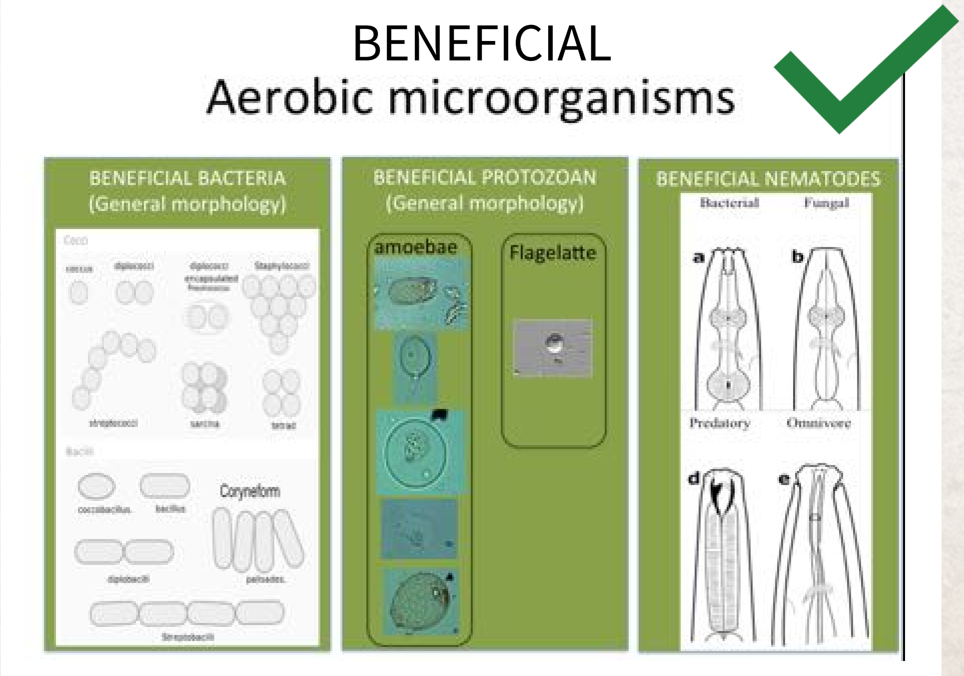
Grow
Grow high quality organic human food systems that are high yield.

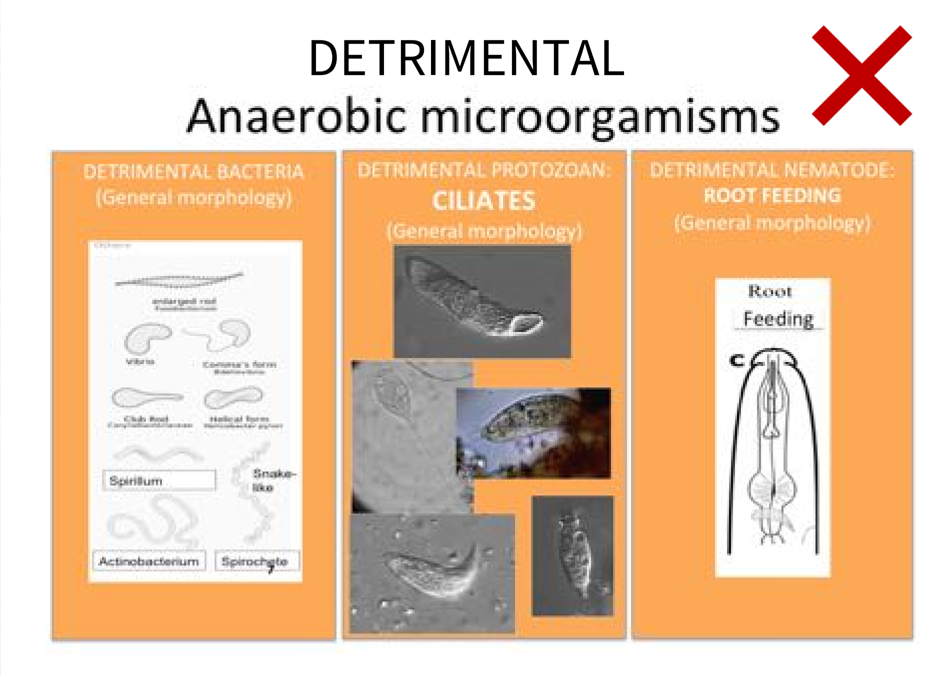
Prove
Microbial life is indeed responsible for optimal nutrient cycling to plants, thus optimal plant, crops, and vegetable growth.

KEY: KEEP SOIL AEROBIC

Beneficial microorganisms build and maintain soil structure, allowing air to infiltrate. This creates aerobic conditions deep in the soil profile.

Soil microbes can be loosely categorized as being either aerobic, meaning they thrive in oxygen rich conditions or anaerobic, meaning they thrive in low oxygen conditions.
The vast majority of beneficial microbes are aerobic, and the majority of disease-causing microbes are not.





PROCESS

1. ***Assess the current state of the soil***
2. ***Remediate with appropriate microbiological inoculation solution***
3. ***Compare control scenario beds to amended beds***
4. ***Prove microbial life is the key to optimal sustainable agriculture***

YIELD EXPERIMENT SCENARIOS

SCENARIO 1

CONTROL

Control beds are kept with **no amendments.**

SCENARIO 2

COMMERCIAL COMPOST AMENDMENT

It is designed to explore the **results in yield coming from compost amendments only**; disregarding its possible lack in microbiological life. Comparison will be done with scenario 1 and scenario 3.

SCENARIO 3

MICROBIOLOGICAL INOCULATION + COMMERCIAL COMPOST AMENDMENT

This scenario receives commercial compost amendment with 59 Degrees' compost extract, topped up with Flor.ès.Sens Systems protozoan infusion. Supporting points made in section 1 & 2, **this scenario is designed to explore if there is a difference in yield due to the tailored microbiological inoculation**, compared to scenario 2 and scenario 1.

WEED PRESSURE EXPERIMENTS

SCENARIO 1	**MICROBIOLOGICAL INOCULATION**	In similar field conditions than scenario 1, **does a microbiological inoculation make a difference** with weed pressure?
SCENARIO 2	**CONTROL**	Trial bed is kept with **no amendment at all.** How much weeds do we have?
SCENARIO 3	**MICROBIOLOGICAL INOCULATION +** COMMERCIAL COMPOST AMENDMENT	This scenario receives **commercial compost amendment with 59 Degrees' compost extract, topped up with Flor.ès.Sens Systems protozoan infusion.** In similar field conditions than scenario 4, does a microbiological inoculation make a difference with weed pressure?
SCENARIO 4	**COMMERCIAL COMPOST**	**Only commercial compost** is added to the trial bed. Weed pressure is checked.

RESULTS & OUTCOME

With the help of Dr. Elaine's Soil Foodweb Approach, this trial makes a clear point on how beneficial aerobic microbiology performs on our crops yield and overall health.

As a consequence, we have to give relevant soil microbiological management in a context of soil restoration, soil microbiological health, i.e soil health.

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WEED RESULTS SUMMARY

FACTS:

Our microbiological inoculant has a noticeable effect on weed pressure:

WITH commercial compost amendment

33% lower

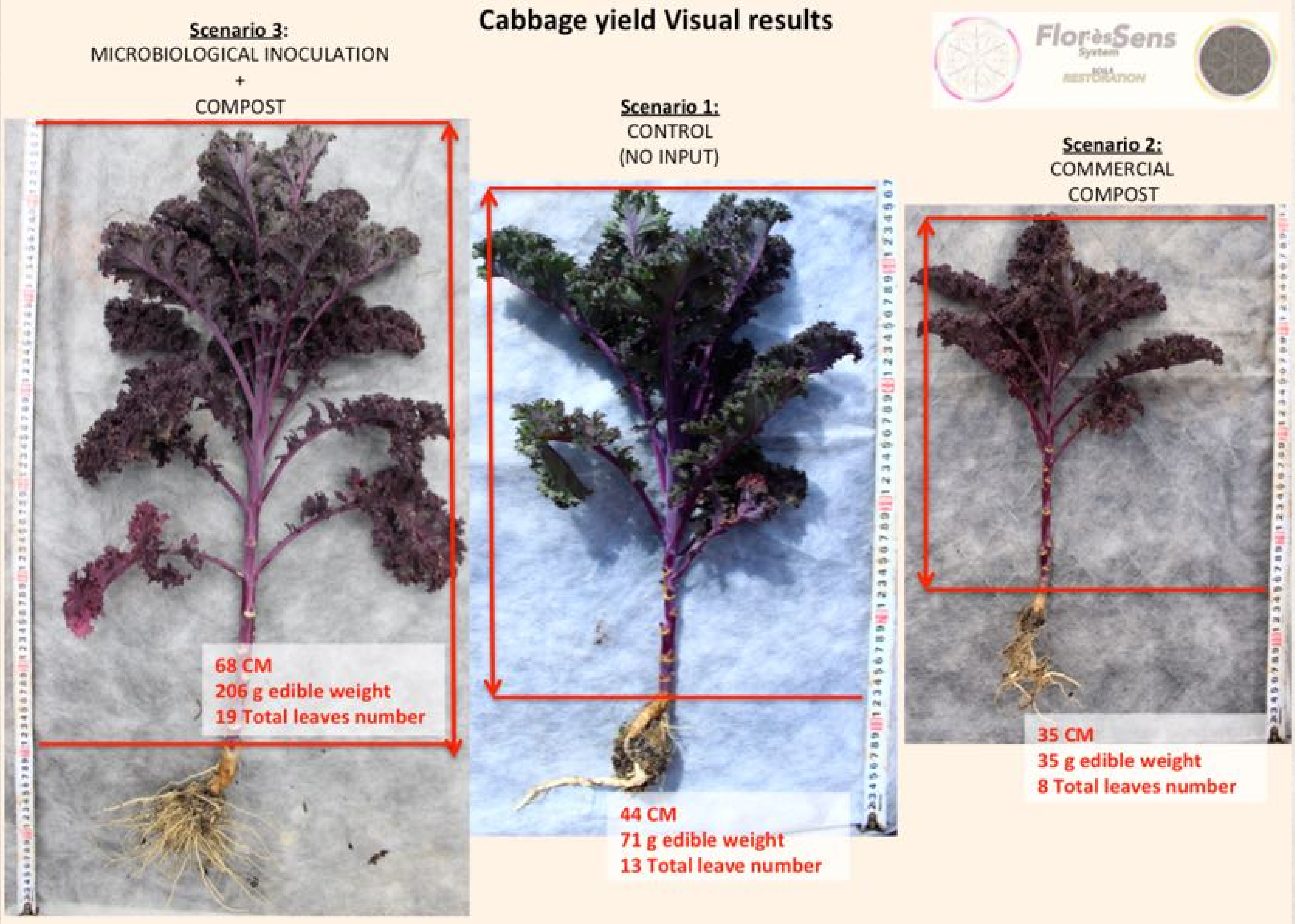
weed biomass production

WITHOUT commercial compost

38% lower

weed biomass production

Experiment dates: 10/06/2017 - 17/07/2017 | We did not weed during that period and measured weed green weight.



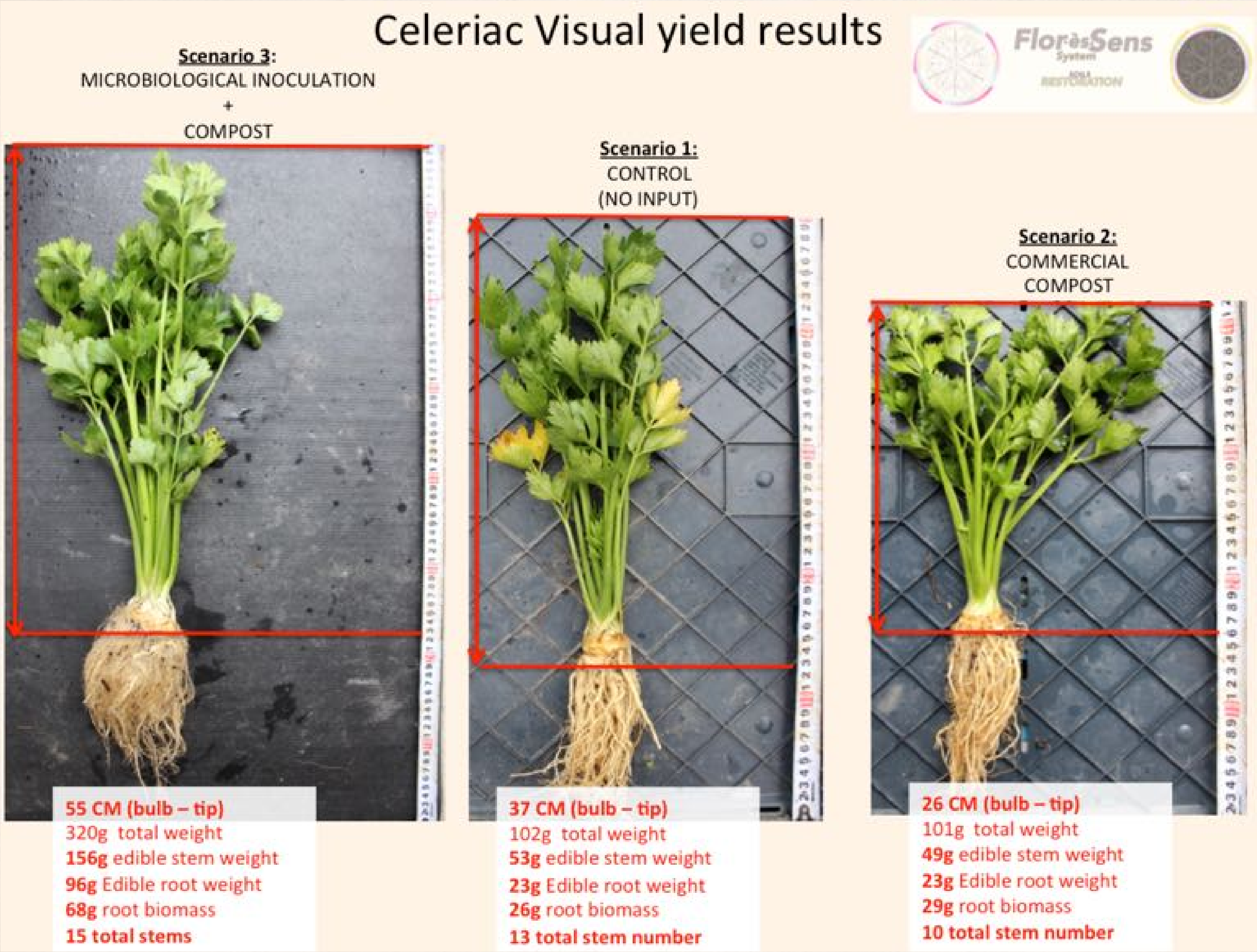
FACTS:

Cabbage

Yield Increased:

126%

With Microbiological Inoculation + Compost



FACTS:

Celeriac

Yield Increased:

149%

With Microbiological Inoculation + Compost

Fennel Visual yield results

Scenario 3:
MICROBIOLOGICAL INOCULATION
+
COMPOST

Scenario 1:
CONTROL
(NO INPUT)

Scenario 2:
COMMERCIAL
COMPOST

56 CM (Base – tip)
140g total sellable weight

46 CM (Base – tip)
52g total sellable weight

46 CM (Base – tip)
61g total edible weight

FACTS:

Fennel

Yield Increased:

58%

With Microbiological Inoculation + Compost

Onion Visual yield results

Scenario 3:
MICROBIOLOGICAL INOCULATION
+
COMPOST

60 cm Average height (bulb – tip)
46g Average unit weight

Scenario 1:
CONTROL
(NO INPUT)

32 cm Average height (bulb – tip)
46g Average unit weight

Scenario 2:
COMMERCIAL
COMPOST

18 cm Average height (bulb – tip)
45g Average unit weight

FACTS:

Onion

Yield Increased:

12%

With Microbiological Inoculation + Compost

Potatoe Visual yield results

Scenario 3:
MICROBIOLOGICAL INOCULATION
+
COMPOST

42g average unit weight

Scenario 1:
CONTROL
(NO INPUT)

17g average unit weight

Scenario 2:
COMMERCIAL
COMPOST

9g average unit weight

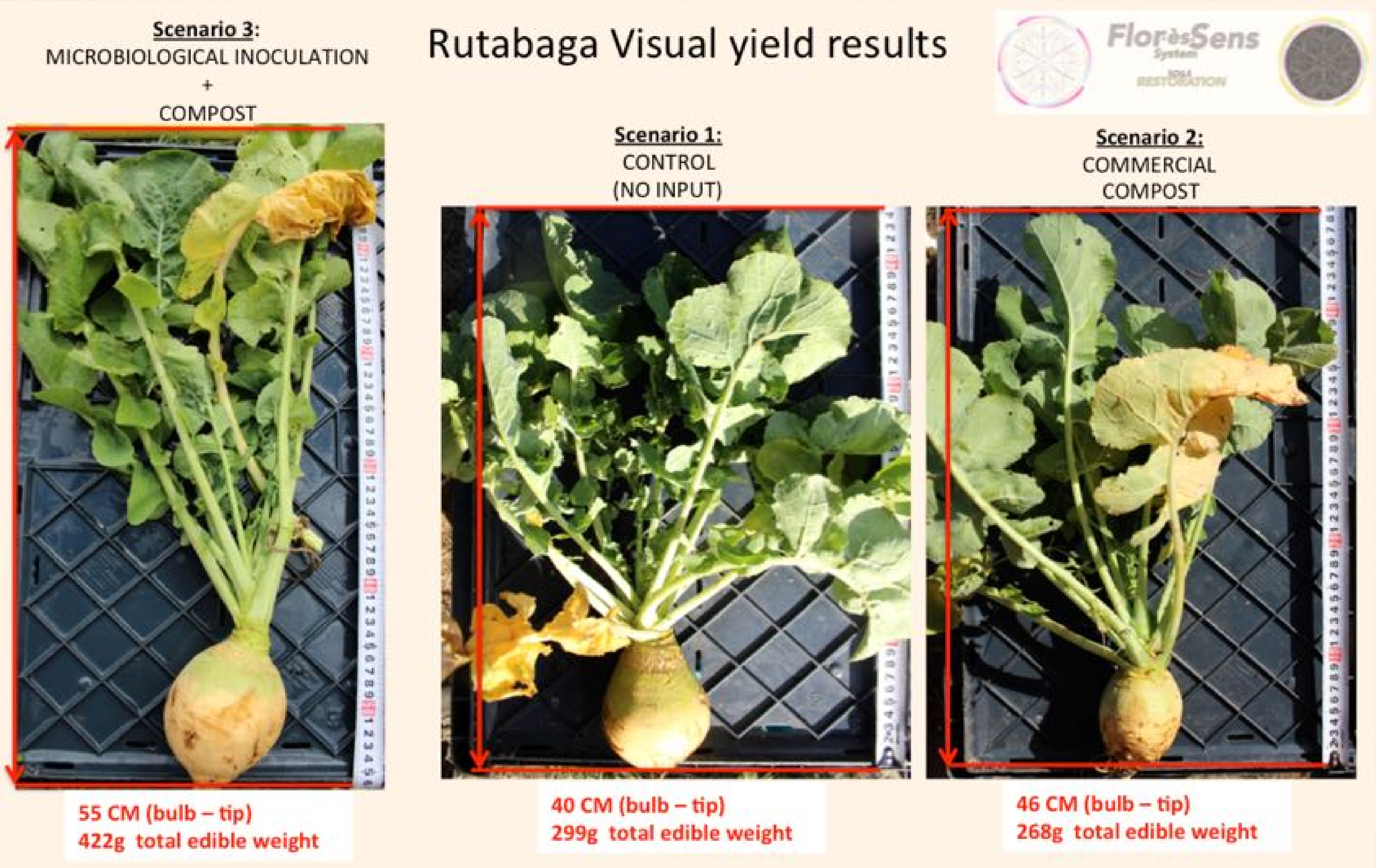
FACTS:

Potato

Yield Increased:

42%

With Microbiological Inoculation + Compost



FACTS:

Rutabaga

Yield Increased:

73%

With Microbiological Inoculation + Compost

Salad Visual yield results

Scenario 3:
MICROBIOLOGICAL INOCULATION
+
COMPOST

Scenario 1:
CONTROL
(NO INPUT)

Scenario 2:
COMMERCIAL
COMPOST

Scenario 3: 20 CM crown diam.
314g total edible weight

Scenario 1: 15 CM crown diam.
142g total edible weight

Scenario 2: 13 CM crown diam.
84 g total edible weight

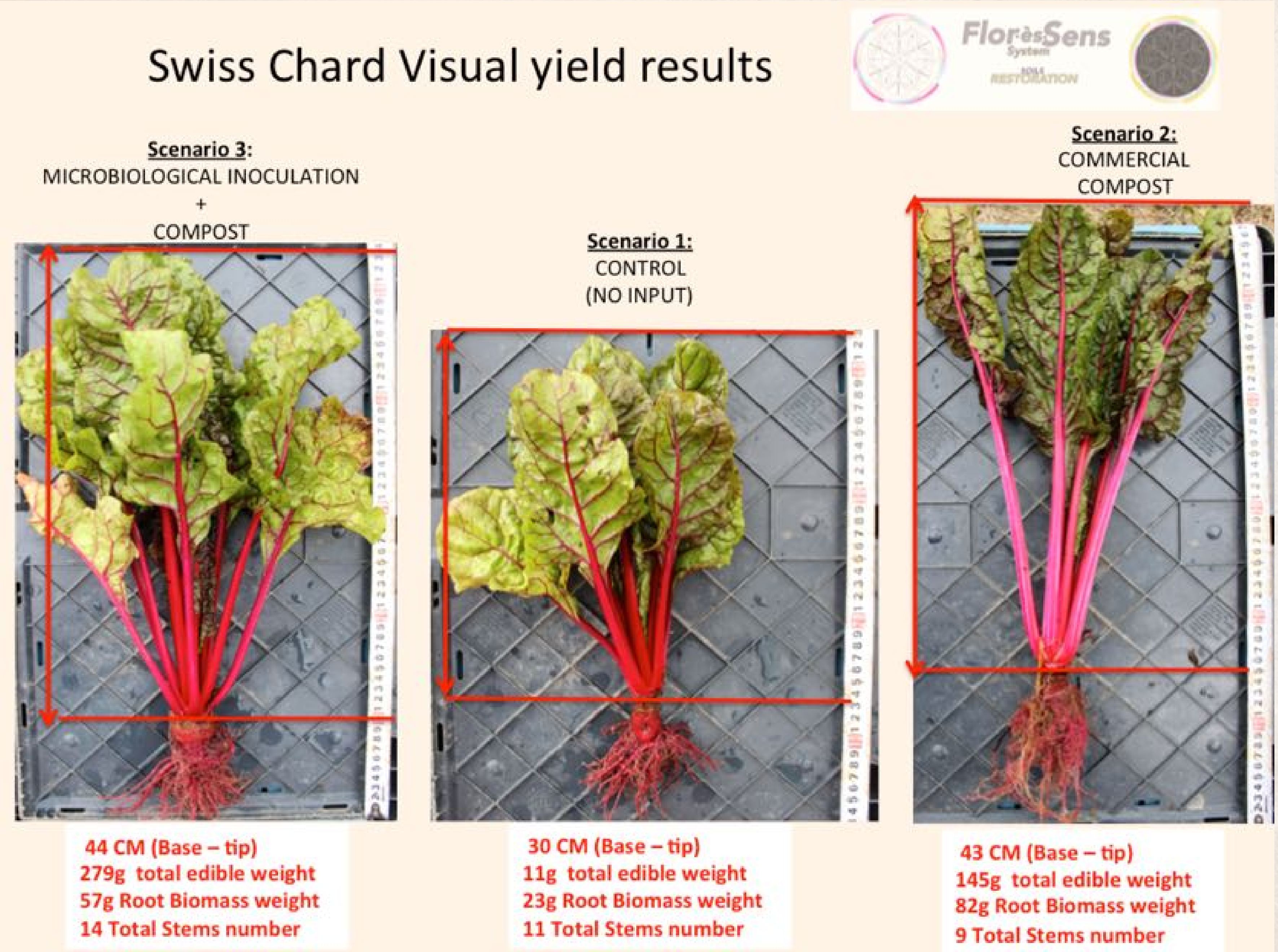
FACTS:

Salad

Yield Increased:

87%

With Microbiological Inoculation + Compost



FACTS:

Swiss Chard

Yield Increased:

63%

With Microbiological Inoculation + Compost

CONTACT US FOR MORE INFORMATION

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