



EcoFlora





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Bacillus firmus
Bacillus amyloliquefaciens
Bacillus subtilis
Bacillus licheniformis
Bacillus megaterium

Bacillus pumilus
Bacillus azotoformans
Bacillus coagulans
Paenibacillus polymyxa
Paenibacillus durum

Pseudomonas aurofaciens
Pseudomonas fluorescens
Pseudomonas putida
Streptomyces coelicolor
Streptomyces lydicus

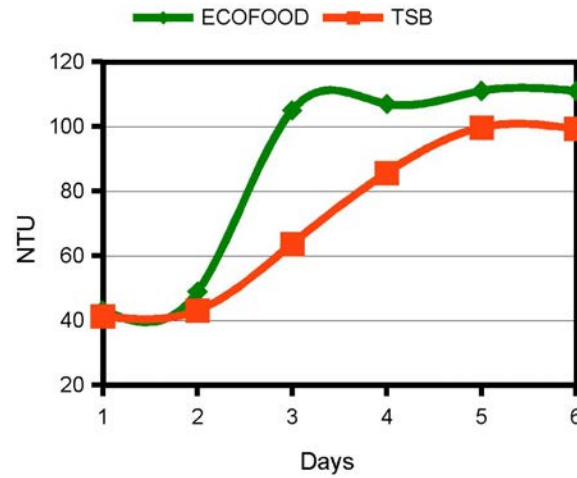
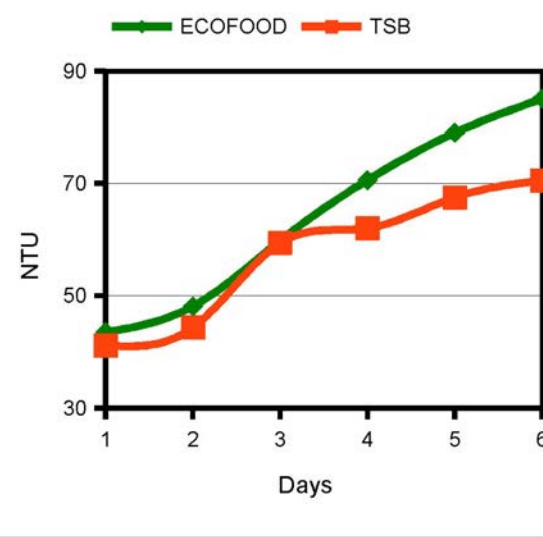
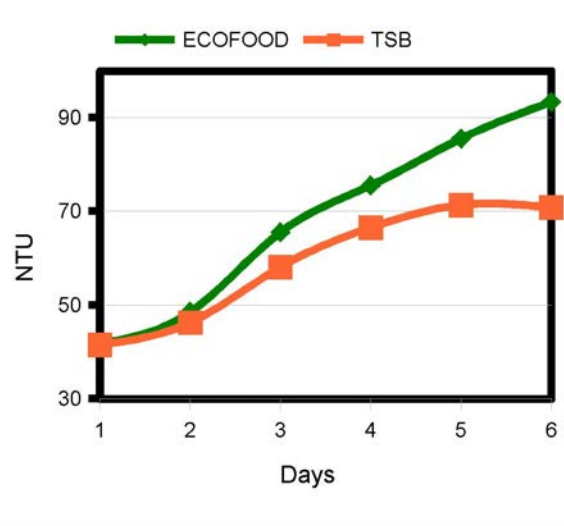
Streptomyces griseus
Trichoderma harzianum
Trichoderma reesei
Trichoderma hamatum

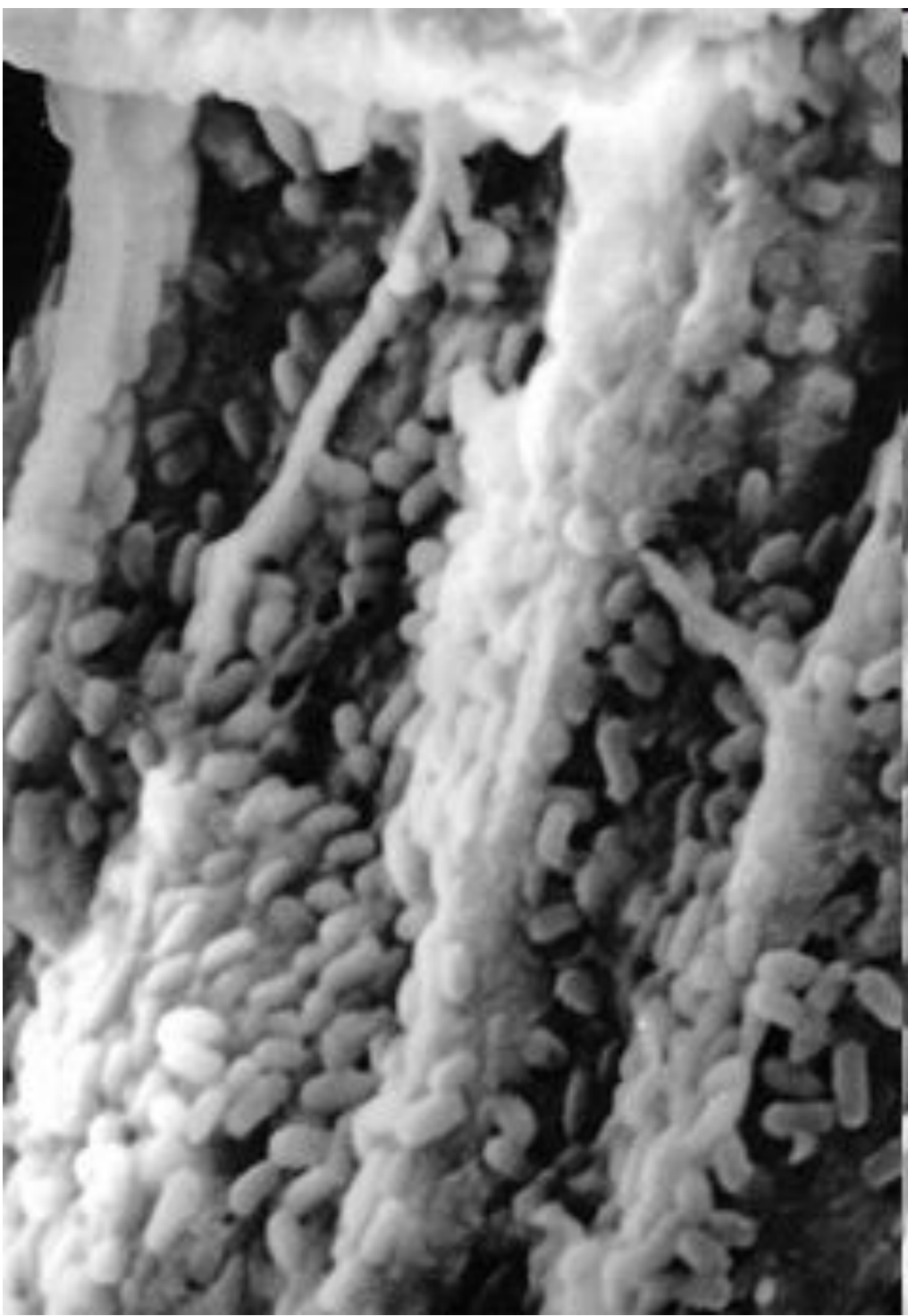
19 strains at a total count of 1,000,000,000 microbes/ gr



Microbial Nutrient Media

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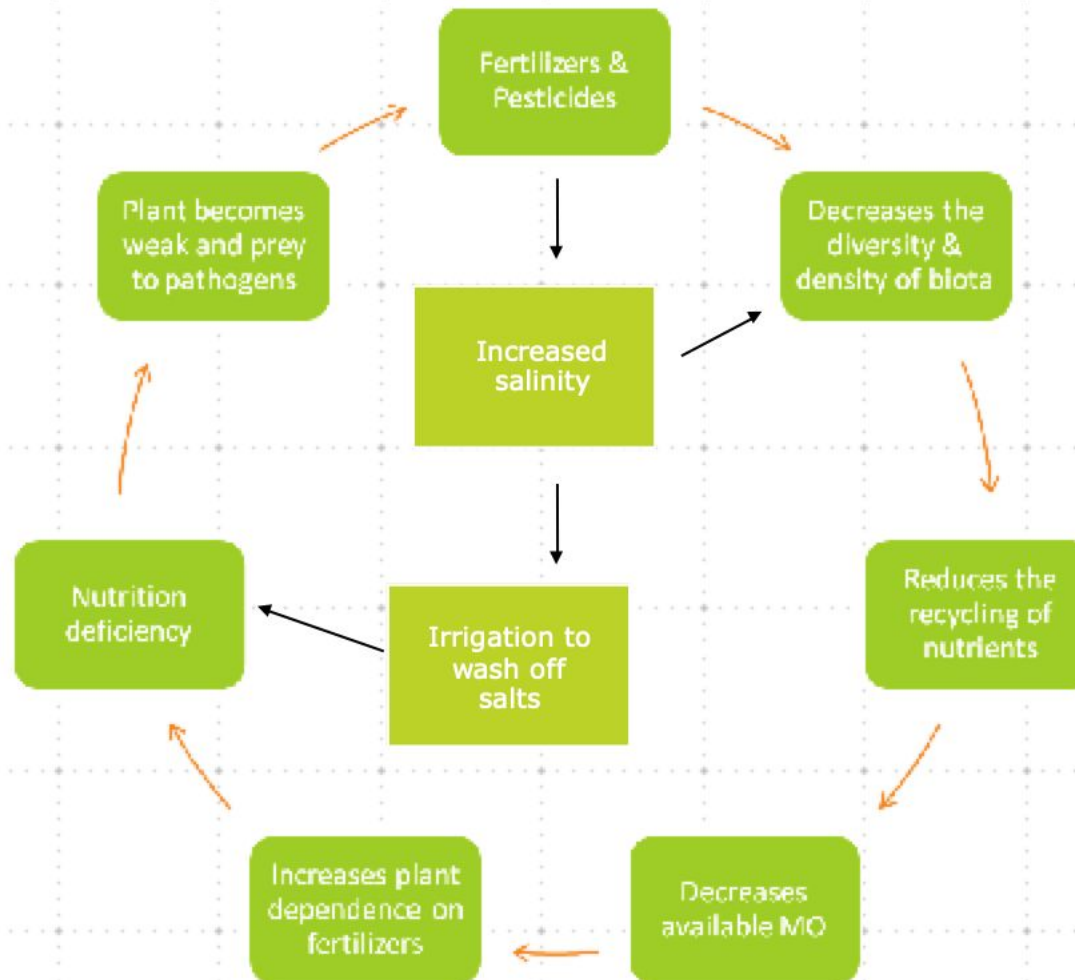




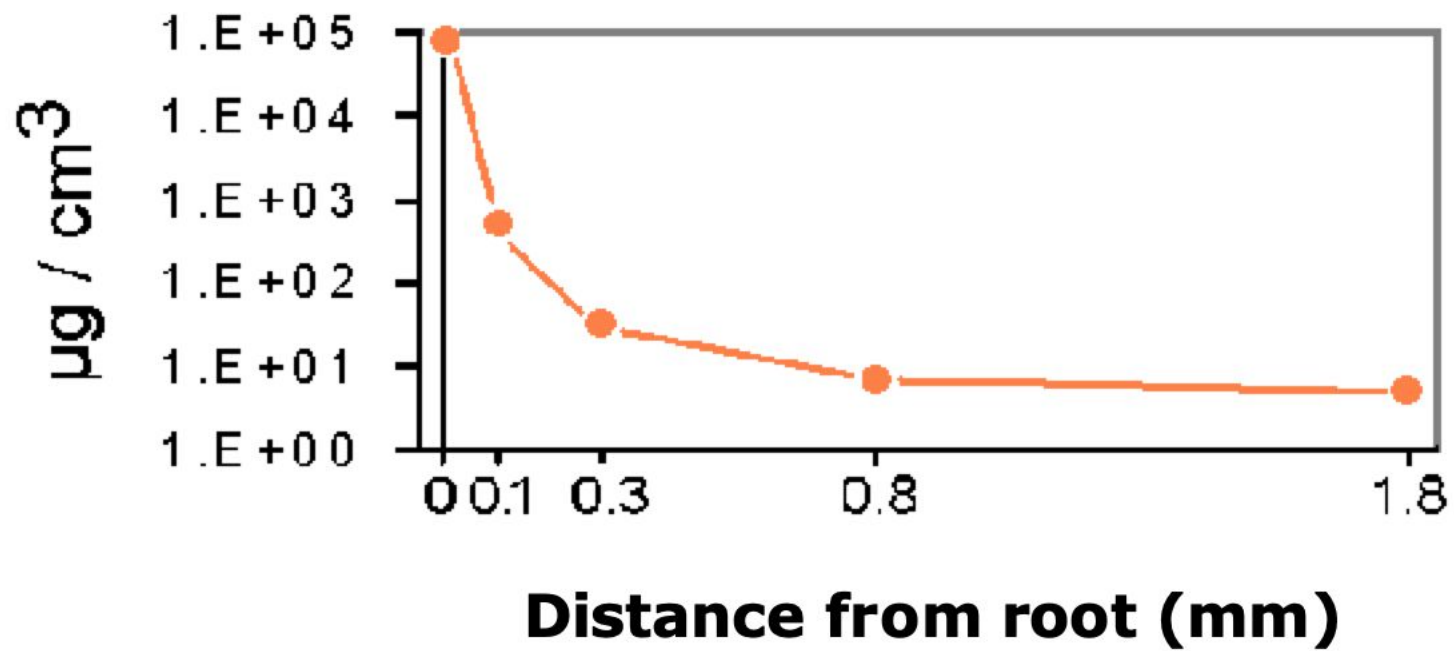
Root covering



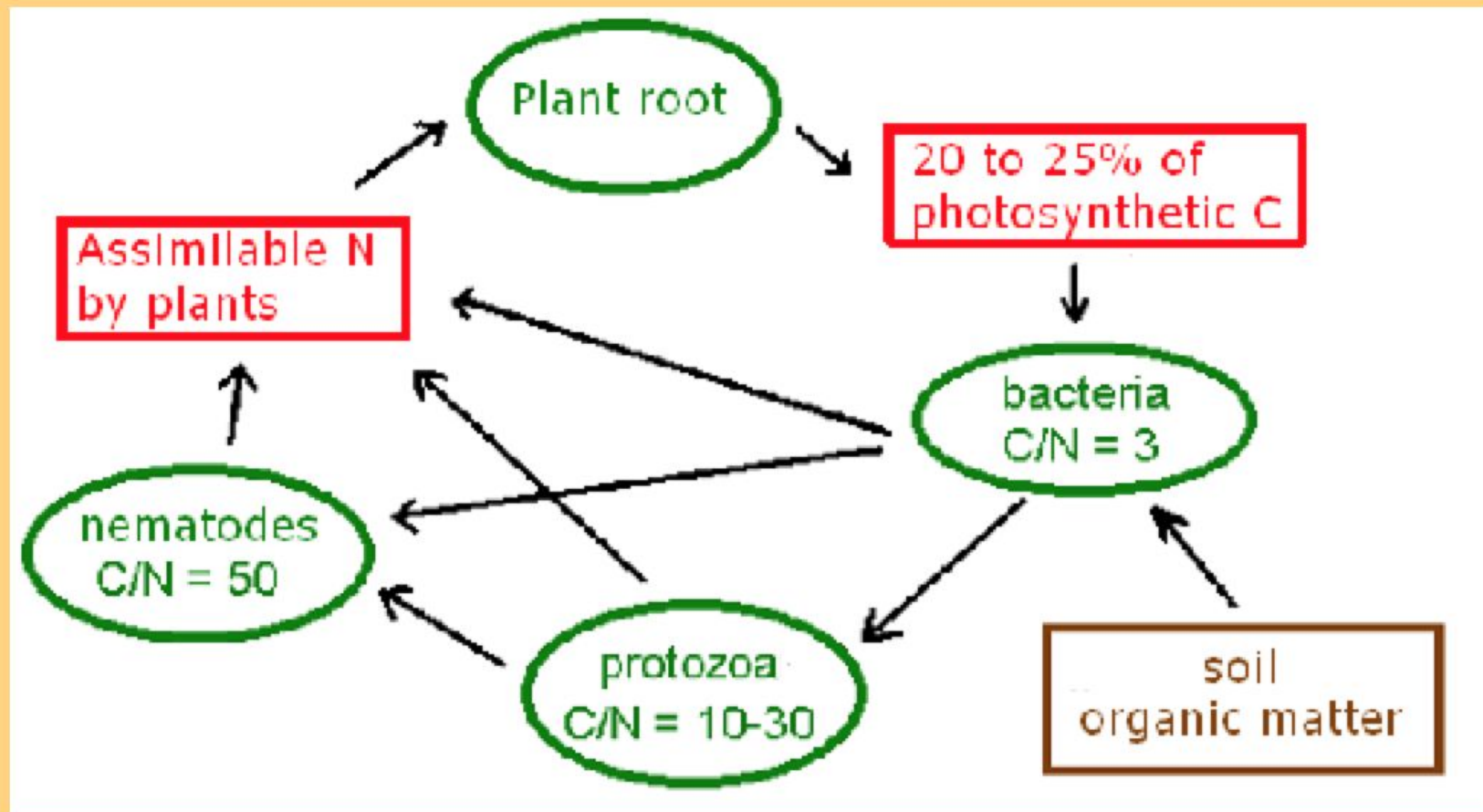
Cycle of soil degradation



Density of microbes in proximity to the roots of plants



Plant releases C to obtain N through the food web



Mechanisms of activity

- Nitrogen Fixing Bacteria
(*Paenibacillus durum*, *P. polymyxa*, *Bacillus azotoformans*)

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- Plant Growth Promoting Rhizo-Bacteria (PGPRB)
(*Bacillus subtilis*, *B. amyloliquefaciens*, *B. firmus*, *B. licheniformis*,
B. pumilus, *Paenibacillus polymyxa*)

Gibberellin Production = *B. pumilus*, *B. licheniformis*
Auxin (Indole Acetic Acid) = *B. subtilis*, *B. amyloliquefaciens*, *B. firmus*
Cytokinins = *P. polymyxa*, *B. subtilis*

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(*Bacillus subtilis*, *B. amyloliquefaciens*, *B. pumilus*)
- Bacteria, Actinobacteria & Fungi Antagonistic To Pathogenic Organisms
(*Streptomyces lydicus*, *S. griseus*, *S. coelicolor*, *Trichoderma hamatum*, *T. reesei*, *Pseudomonas fluorescens*, *P. putida*, *Bacillus subtilis*, *B. pumilus*, *B. licheniformis*)

Dose rates

Growing Media Amendment

Incorporate 0.55 to 1 oz per cubic yard of growing media

Nursery

Apply weekly or every two weeks at 1.8 oz per 100 square yards

Grains

Immerse the seed to be used in an acre in 1.5 oz. Apply to soil and foliage at 4 to 7 oz per acre at emergence and pre-florescence.

Ornamentals, Row Crops

Apply to soil at planting at a rate of 6 oz/acre, then apply to soil and foliage at a rate of 4 to 8 oz per acre every 4 to 6 weeks.

For strawberries apply a dose rate of 8 oz per acre every month.

For grapes apply a dose rate of 4 to 6 oz per acre per month.

For a lower cost program apply product at planting or 3 leaves stage at 6 oz/acre, pre-florescence and pre-fruit formation at a rate of 4 to 10 oz per acre.

Foliar application over the fruits at a 1:5,000 to 1:10,000 dilution will protect them from fungal diseases. Weekly applications at 2.8 oz/acre will help control plant diseases.

Root crops

Ginger and turmeric apply to seed, emergence, two weeks and four weeks after planting at 1.8 to 2.3 oz/acre

Potatoes at planting or 3 leaves stage at 6 oz/acre, pre-florescence and pre-fruit formation at 4 to 10 oz per acre

Fruit and nut trees

Apply to soil 3 to 5 oz per acre every month. Apply to foliage at a dilution of 1:5,000 to 1:10,000 prior to flowering and fruit formation.

Flowers

Apply every week at 2.85 to 4.2 oz/acre

Weekly applications at 6 to 8 oz/acre will help control plant diseases.

Golf courses

Apply at a rate of 0.45 oz per 100 square yards of greens or tees, and 0.2 oz per 100 square yards of fairways. Apply weekly or monthly.

If bacterial or fungal disease increase to 0.9 oz per 100 square yards every two weeks.

Hydroponic systems

Dissolve monthly 1/4 oz for every 55 gallons of water in the culture system

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Banana plants grown without and with ECOFLORA



Plants grown by traditional method (left) and with ECOFLORA (right)

CONTROL



ECOFLORA



15 days old tomato plants from treated seeds with ECOFLORA vs control in Germany

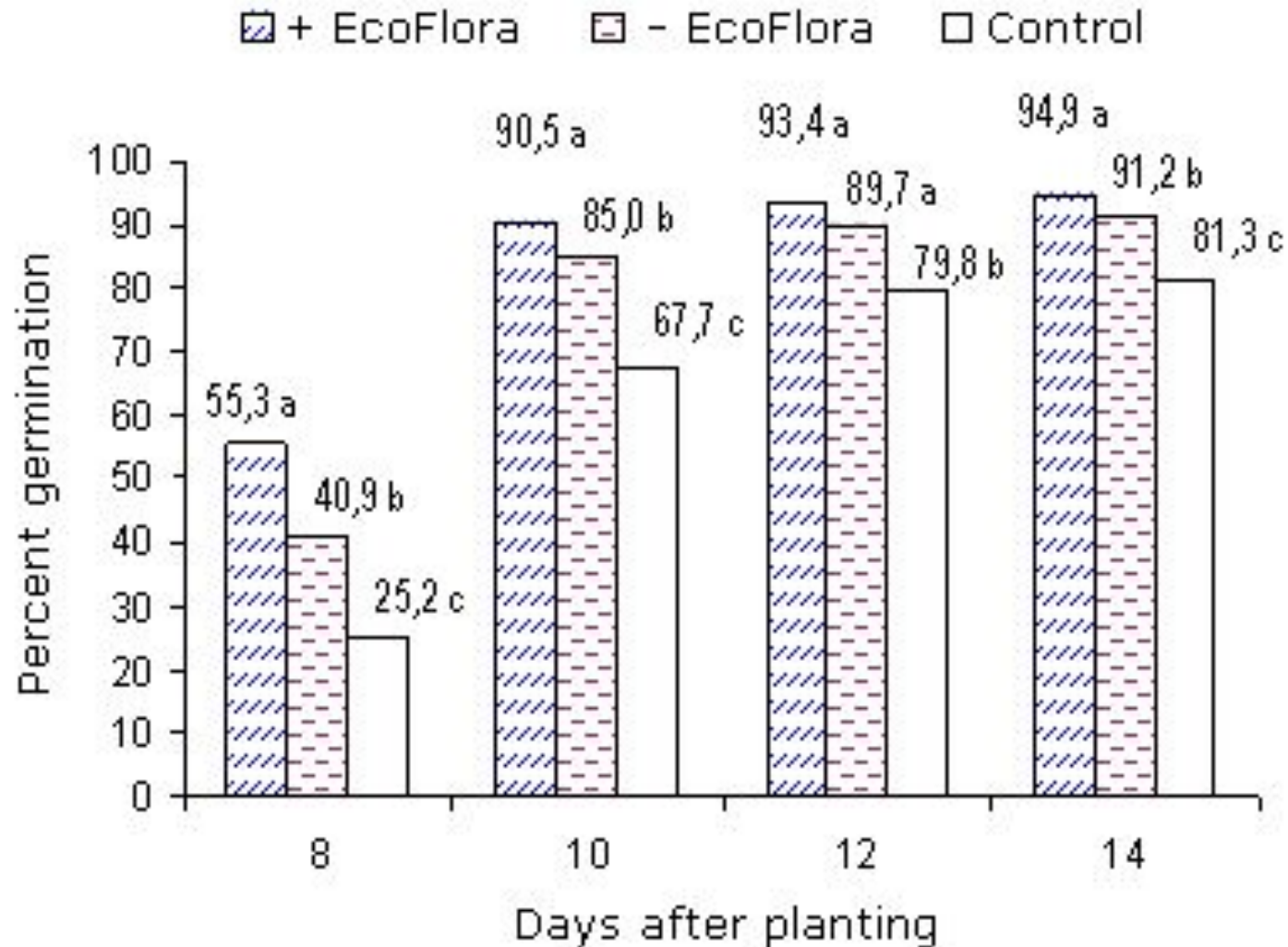


Organic lettuce treated with ECOFLORA

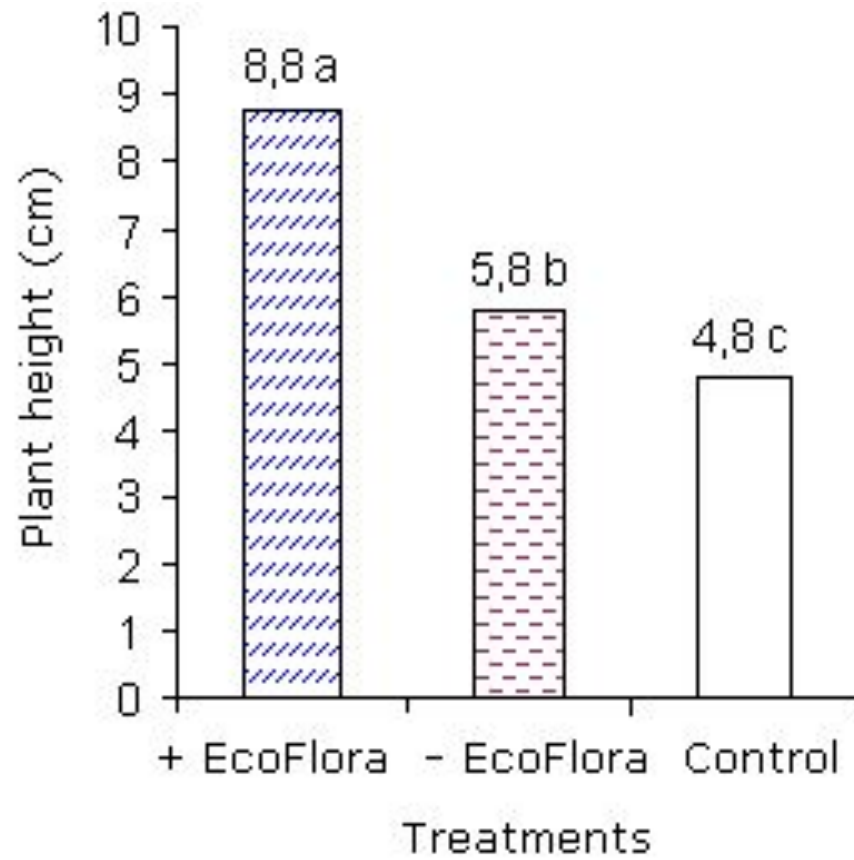


Tomato Trial in Nursery

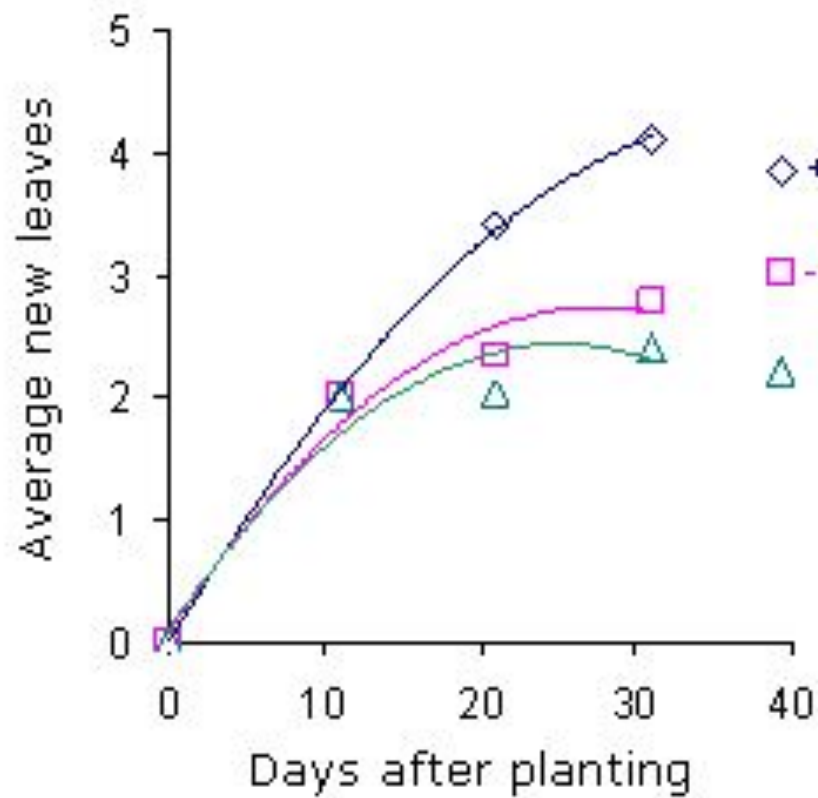
EcoFlora was applied to the disinfected substrate and then every ten days. EcoFlora was applied to the foliage for a total of three foliar applications at a dose rate of 80 grams ha⁻¹ application⁻¹



37 days after planting



Treatment	n	Dry weight (g)					
		Foliar		Root		Whole plant	
EcoFlora	80	0.139	a	0.051	a	0.190	a
Disinfected	80	0.094	b	0.035	b	0.129	b
Control	80	0.060	c	0.022	c	0.082	c



◇ + Ecoflora

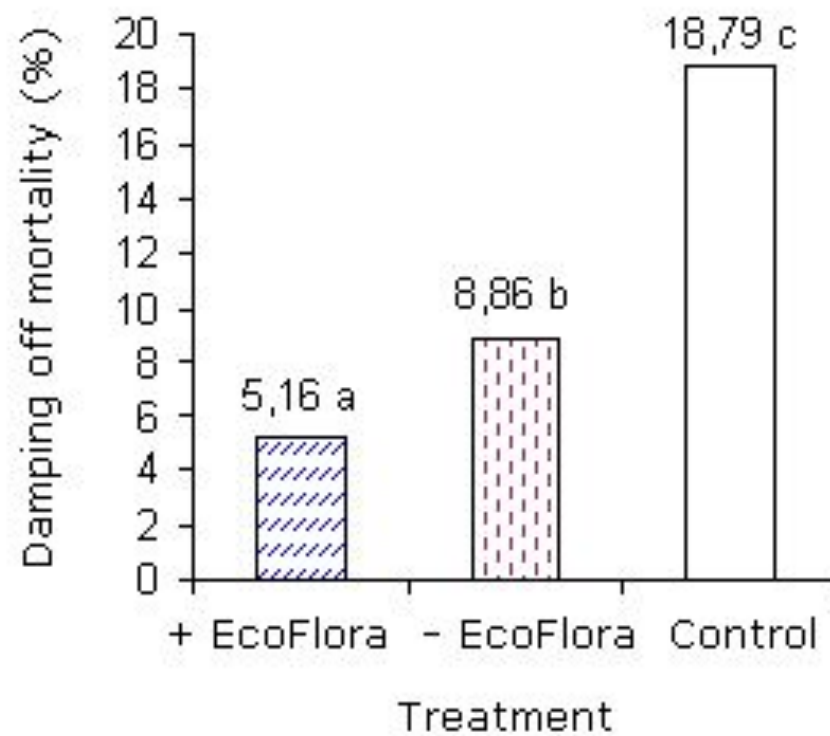
$$y = -0,0027x^2 + 0,2175x - 0,0153$$

□ - Ecoflora

$$y = -0,0035x^2 + 0,1933x + 0,0704$$

△ Control

$$y = -0,0037x^2 + 0,1853x + 0,0956$$



Processed Tomatoes

EcoFlora was applied at planting, and after 15, 30 and 45 days after planting at a prorated dose rate of 7 ounces (200 gr) per acre per application.

	Yield (lbs/acre)	Brix	TA%	Bostwick
EcoFlora	44,225	5.96	0.37	14.13
Control	38,624	5.55	0.31	16.30
Differences	+ 14.5%	+ 7.01%	+ 19.35%	- 13.31%

Potato Trial

The treated plot received three applications of EcoFlora at planting, emergence and at 40 days post emergence at a dose rate 5.4 oz/acre/application

Treatment	Quality	Weight kg/ m ²	% variation
Control	Large	1.10	70.06
	Regular	0.42	26.75
	Discard	0.05	8.77
Total Control		1.57	
EcoFlora	Large	2.21	91.32
	Regular	0.19	7.85
	Discard	0.02	0.83
Total EcoFlora		2.42	+54%

Potato Trial - South Africa

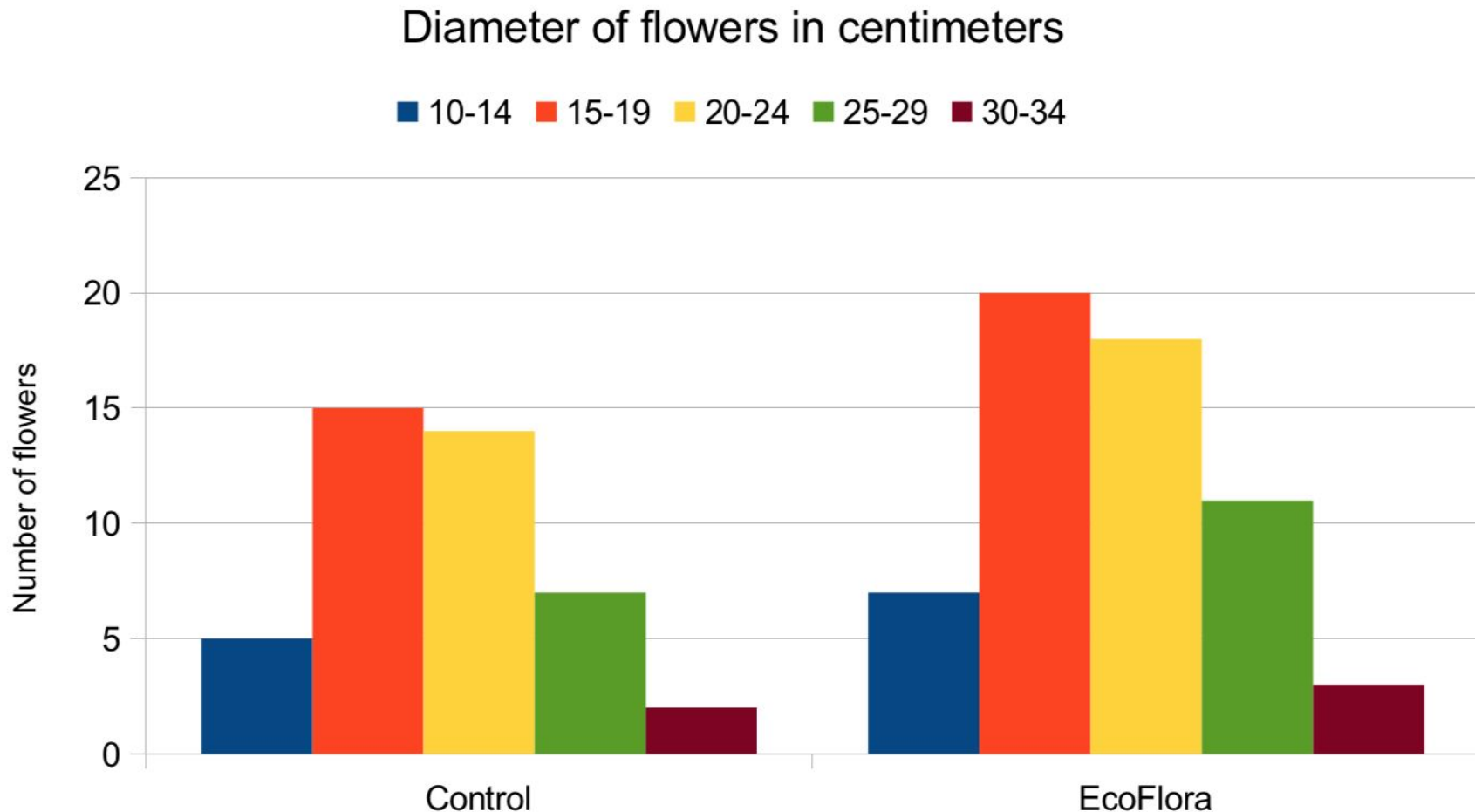
Treatment	Application Method	Time of application	Water (L/ha)	AgraBios Dosage
1	None			
2	Seed application	With plant	250	500 g
β	1 st app: Seed	1 st app: With <u>plant</u>	1 st app 250	1 st app: 500 g
	2 nd app: Irrigation	2 nd app: Five leaves on main stem unfolded	2 nd app: 100 000	2 nd app: 20 L/ha
4	Via Irrigation	Five leaf on main stem unfolded	100 000	20 L/ha

Potato Trial - South Africa

Treatment s	Tuber mass (g)
1	412.3
2	493.9
3	646.8
4	419.2
P	0.037
LSD _(F;0.1)	99.7*

Broccoli Trial

EcoFlora was applied at planting at a rate of 400 grams per hectare (5.7 oz/acre). On days 20 and 40 EcoFlora was applied at a dose of 200 grams per hectare (2.85 oz/acre).



Average weight of flower in pounds

SD = Standard deviation – CV = Coefficient of variation = (SD/mean)x100

	Control	EcoFlora
Mean	2.125	2.688
SD	1.108	0.625
CV	52.14%	23.25%

Average Yield of Broccoli in lbs per bed

Control	1 st harvest	2 nd harvest
Mean	42.5	41.25
SD	22.17	18.87
CV	52.16%	45.75%

EcoFlora	1 st harvest	2 nd harvest
Mean	53.75	67.5
SD	12.5	15
CV	23.26%	22.22%

Rose

Trial

Dose A: Corresponding to 300 gr/ha/week (4.2 oz/acre/week)

Dose B: Corresponding to 150 gr/ha/week (2.1 oz/acre/week)

Week	Dose A				Dose B			
	Pink Parfait		Flower Show		Forever Amber Normal soil		Forever Amber Deteriorated soil	
	EcoFlora	Control	EcoFlora	Control	EcoFlora	Control	EcoFlora	Control
7	97	62	69	25	23	23	16	4
8	78	44	36	17	20	17	8	4
9	33	23	24	24	17	16	7	1
10	17	16	8	6	5	3	0	1
Total	225	145	137	62	65	59	31	10
Difference	+80		+65		+6		+21	
Improvement	55%		104%		10%		210%	

EcoFlora to Control Fungal Diseases?



Magnaporthe poae in the turf
Baron Kentucky Bluegrass.

EcoFlora is similar to chemicals in disease control

Product	Grams/ 100 m ² / 15 days	Control M. poae
Heritage 50W	61	95.2%
Chipco 1.67 SC	30.5	85.8%
Clearly 3336 50W	244	93%
EcoFlora	61	89.5%

EcoFlora is better in biocontrol than other biologicals

Biocontrol Agent	Plant Mortality
Control	94.4%
Soil Guard	83.3%
Root Guard	66.6%
EcoFlora	52.8%

Pathogenic fungus *Fusarium oxysporum* in Lisianthus, variety Maurine Blue

EcoFlora – Another Example As a Fungicide Alternative

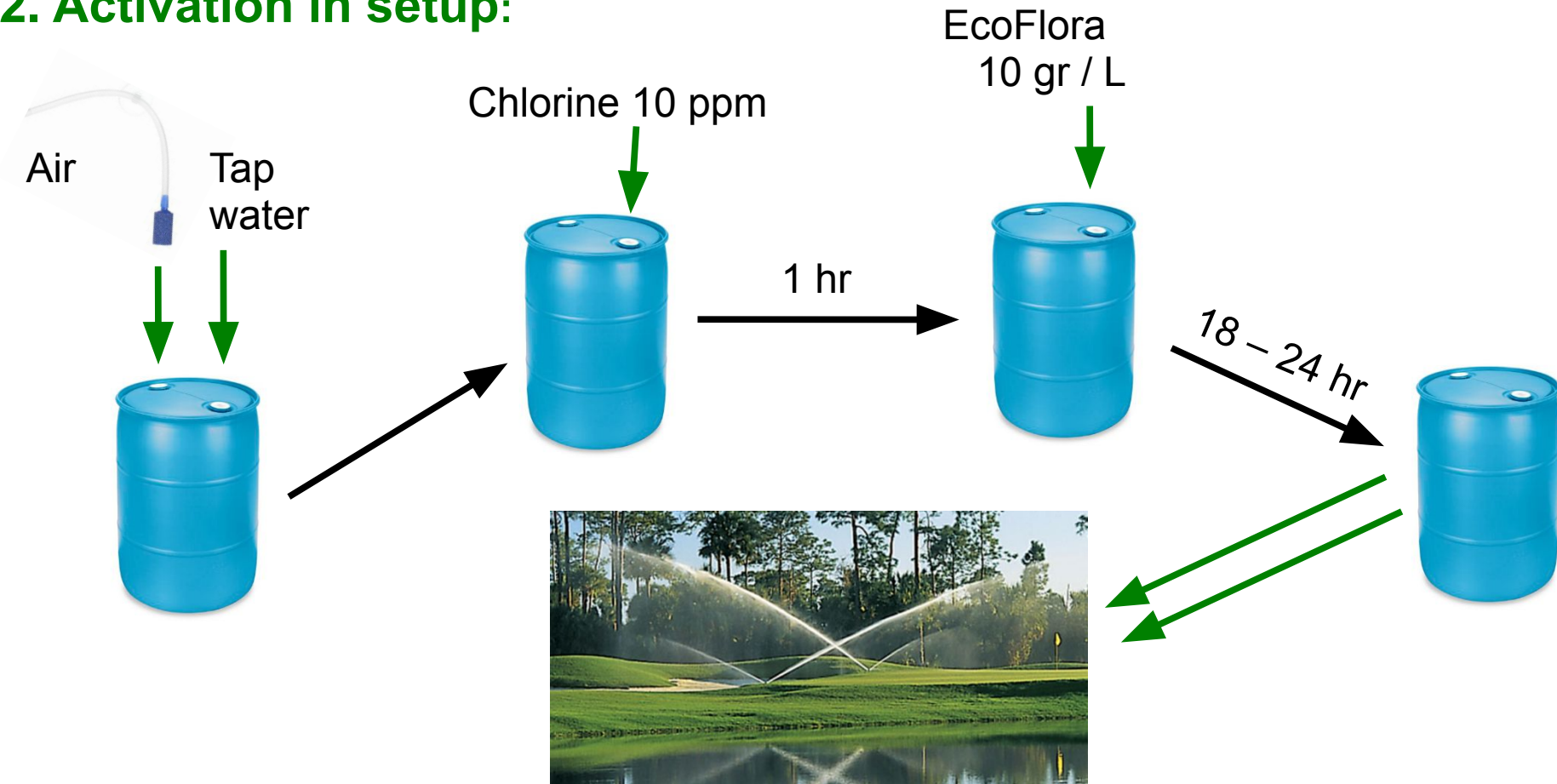
The chemical fungicide Mancozeb had been used in the trial farm until it did not control any more the proliferation of the fungus Black Sigatoca.

- Reduce ½ the number of applications
 - Apply once every 2 weeks, 6 apps total
 - Up to 16 applications per cycle
- Organic solution at lower costs
- 2 months to control fungus proliferation

Application modes:

1. Direct application: Dilute in water and apply

2. Activation in setup:



WARNING

Do not use antagonistic fungicides or bactericides

Copper is effective fungicide but accumulates in soil and destroy life

Always flush irrigation lines before applying biologicals

Wait one week before and after biological application to apply pesticides

Apply products in morning or afternoon to avoid high heat