SUSTAINABLE FARMING SOLUTIONS

Sabel-X HORTICULTURE

BIOLOGY FOR IMPROVED PRODUCTIVITY

Horticulture

Improve yield with next generation Endophytic Trichoderma

Exceptional grower feedback .... consistent improvements in establishment, growth & healthy crops leading to improved yield.

Biology for improved productivity

- Increases nutrient & moisture uptake
- Greater tolerance to stress events
- Reduces effect of soil pathogens
- Higher yields

Sabel-X Trichoderma - how they work

Sabel-X Trichoderma establish inside the plant withing 48 hours of applying to a live root system or germination of treated seed. They immediately begin communicating with the plant.

Sabel-X Trichoderma persist for the life of annual crops, playing a key role in signalling within the plant and to beneficial root zone microbes.

Sabel-X Trichoderma initiate and interpret signals from the plant to improve crop performance by:

1. Upregulating genes involved in photosynthesis, increasing energy available to the plant by up to 30%. More energy for extra plant growth (& yield) in the form of root exudates to nourish soil microbes, releases previously inaccessible nutrients.
2. Attract beneficial microbes to the plant roots, coordinating the microbial activity to create a healthy root zone, reducing the effect of soil pathogens.

The signals and results produced by Sabel-X Trichoderma are in addition to those produced by the plant alone.

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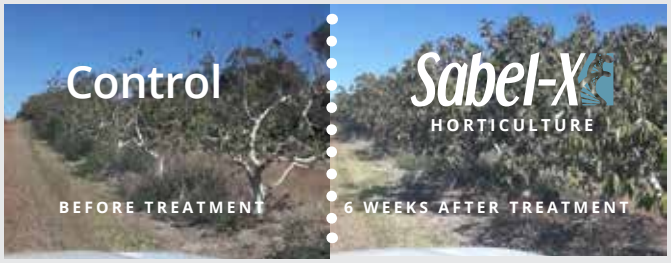
Parsley - South Australia 2020

Sabel - X Hort - 48% yield increase : ROI - 109: 1

Sabel - X Hort - better seedling establishment, better root growth & more uniform growth. SA 2020

Spinach trial in Lindenow, Victoria (Sioux). Sabel-X Horticulture treated crop is a standout in vigorous early seedling growth.



Avocado Trees - in less than 6wks, the 87 problem trees all had regrown significant leaf and new branches, and have retained them. QLD

Chip Potatoes - Sabel-X amplified the result, improving the return of investment from $564 to $2,118/ha. QLD

Sabel-X improves growth -SA

Sabel-X improves growth -SA

Sabel-X dramatically improves growth -QLD

Onions - 26% yield increase using Sabel-X on Victorian commercial trial.

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2 weeks post planting - more growth with Sabel-X Hort

5 weeks post planting - more growth with Sabel-X Hort

Root colonisation show shows Sabel-X Trichoderma have colonised inside the roots.

Seedless Javelin Watermelon - Bundaberg QLD

Sabel-X Hort improved growth: Sabel-X Hort treated rows harvested 5 days ahead of control as a result of better growth.

Return on Investment: $806.40/ha on $14/ha investment (57.6:1). This does not take into account harvesting 5 days earlier due to improved growth.

Crop	Rate	Comment
Vegetables		
In furrow, irrigation, drench & spray	500g/ha	• Ideally apply at planting or within a week of planting. • Mix with non-chlorinated water; agitate tank for 20-30 minutes before use; maintain agitation during application. • Spray: Wash into root zone with a light irrigation. • In-furrow: Use minimum of 100L of water per 250g pack. • Product to be used on the same day it is diluted.
Seed treatment (Direct seed)	2.4g/kg seed - small seeds 1.2g/kg seed - large seeds	• Apply dry seed treatment on day of planting.
Nursery	1g/tray	• Assumes 144 seeds/tray. • Apply as drench or spray. • Adjust rate/tray depending on seed number.
Potatoes		
Seed treatment	250g/1tonne seed	• Apply dry to seed piece on the day of planting.
In furrow, irrigation, drench & spray	500g/ha	• Ideally apply at planting or within a week of planting. • Mix with non-chlorinated water; agitate tank for 20-30 minutes before use; maintain agitation during application. • Spray: Wash into root zone with a light irrigation. • In-furrow: Use minimum of 100L of water per 250g pack. • Product to be used on the same day it is diluted.
Legumes/Corn/ Cereals/Canola (Seed Treatment)	30g/25kg seed	• Apply as a dry seed treatment or water slurry on the day of planting.
Sugar Cane (dip)	500g/40,000 billets	• Dissolve 500g in 400L non- chlorinated water for dipping. • Sufficient to dip 40,000 billets.
Trees & Vines		
Planting	0.5-1.0g/tree or vine	• Apply as a root dip, drench or via the irrigation system. • For mature trees, apply at main seasonal fruit flush; repeat at second root flush. • Apply higher rates to larger trees. • Mix with non-chlorinated water; agitate tank for 20-30 minutes before use; maintain agitation during application. Product to be used on the same day it is diluted. • Use minimum of 100L of water per 250g pack. • Under high pressure and in rehabilitation situations, use 1kg/ha at first fruit flush.
Low density <300 per ha (eg Avocado, Mango)	**< 3 years** 1st root flush: 1.5-2.0g/tree 2nd root flush:1.0-1.5g/tree **> 4 years** 1st root flush: 2.0-2.5g/tree or vine 2nd root flush: 1.0-1.5g/tree or vine	
Medium density 300 -500 per ha	**< 3 years:** 1.0-1.5g/tree or vine **> 4 years:** 1.0-2.0g/tree or vine	
High density 1,000+ per ha	0.5g/tree or vine	

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Trichoderma - 3 types

There are 3 very different types of Trichoderma with different functions:

FREE LIVING

Live in the general soil mass. They break down soil organic matter and help build soil health with long term benefits. They are subject to pH, waterlogging, heat etc and need regular applications.

- Fungicides kill them
- Require multiple applications

RHIZOSPHERE COMPETENT

Live in the rhizosphere with strains selected to outcompete fungal pathogens and colonise the plant root system more aggressively.

- Fungicides kill them.
- Require multiple applications

ENDOPHYTIC TRICHODERMA

Immediately enter the plant and produce metabolites which then induce different plant responses depending on what the plant needs.

Fungicides do not kill them because Sabel-X Trichoderma live between plant cells.

Typically one application because Sabel-X Trichoderma lives as long as plant does.

Sabel-X used to improve growth of problem replants.
Sabel-X was applied as a drench at 4g per tree (in 2L water).
8 weeks later tree has grown to the size of the other trees planted.

Beans - more growth (note less space between plant rows), better establishment (stem thickness, larger roots)

Treatment	Plant health score	Root health score	Set	Stems	Kg Tops	Kg Spuds	Kg Total Biomass
Control	3	5	46	13	1.7	2.8	4.5
Sabel-X 1 treatment	5	8	52	13	2.5	3.6	6.1

Improved yield with Sabel-X Hort

Typical Grower Comment Gingin WA: *"Lettuce usually cut once. Regrowth allowed an extra cut."*