

TS 201TM BIOINSECTICIDE



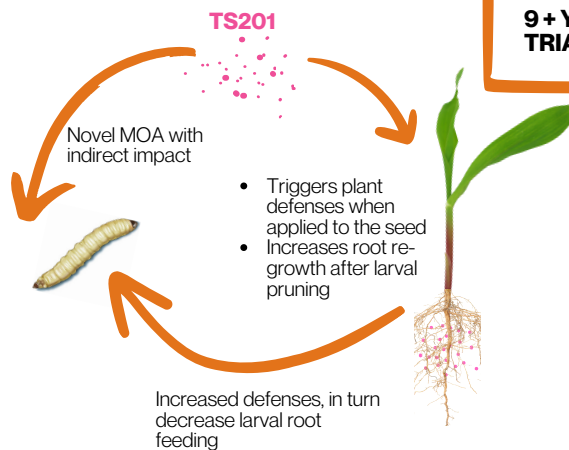
ChampionsTM of Pink PerformanceTM

WHAT IS TS201?

TS201 is an EPA registered bioinsecticide.

TS201 is paired with biostimulant Terrasym 450 for corn to ensure positive ROI regardless of corn rootworm pressure.

TS201 can be used as part of an integrated pest management (IPM) program including traited corn and/ or soil insecticides. NewLeaf Symbiotics does not recommend using TS201 as the only tool for corn rootworm management.



70% WIN RATE

+ 8.8 BU/A WIN ADVANTAGE

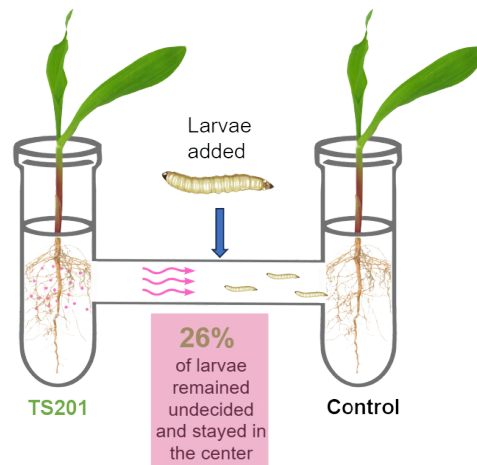
66 DATA POINTS

9 + YEARS OF TRIALS

TS201 has multiple modes of action to mitigate corn rootworm damage; it interacts with the plant to prime the plant's immune system (ISR defenses). The plant produces chemicals which confuse or repel CRW larvae, making it harder for the larvae to find the corn roots. The second mode of action is root regrowth and recovery stimulation for when larvae reach the root and feed.

When corn rootworm larvae are given a choice of roots treated with TS201 and roots with no treatment, 70% of them choose the roots with no treatment (shown here). When corn rootworm larvae are presented with only roots treated with TS201, 80% of them are unable to find roots to feed on.

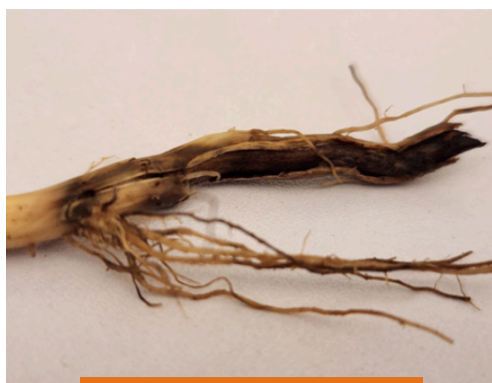
4%
of larvae chose the TS201-treated roots



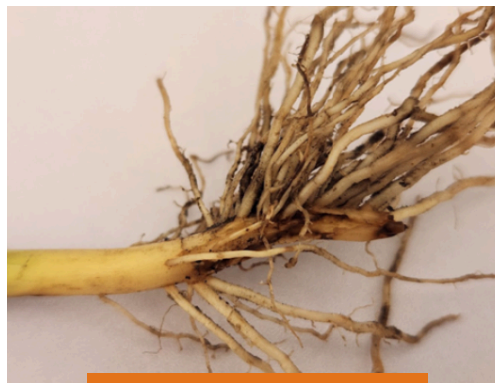
Assay conducted at the University of Missouri 2023: Neonate larvae of Western Corn Rootworm were introduced in the center of the assay system and given time to move to one of the roots, n = 120 larvae over 3 separate runs with 4 replicates each.

* Source: 2023 On farm trials with 10 acre strips comparing TS201 to grower standard practice.

RESULTS USING TS201: ROOT RE-GROWTH AFTER LARVAL PRUNING



GSP



TS201 + Terrasym 450

Individual roots from the 5th node showing re-growth after larval pruning

TS201 + Terrasym 450 treated roots under CRW pressure exhibit an increase in fine roots by 9% compared to grower standard practice (GSP). In addition, there is a 16% increase in root surface area and 10% increase in root depth.

TS201 HELPS REDUCE LODGING EVEN WHEN YOU HAVE INSECTICIDE RESISTANCE OR TRAIT BREAKTHROUGH.

The combination of the interactions of TS201 with the corn plant leads to reduced lodging, better harvestability and increased corn yields.

TS201 REDUCES LODGING AND COMPLEMENTS CURRENT MANAGEMENT PROGRAMS

FEEDING PRESSURE	LOCATION	RATING	UTC	INSECTICIDE	TRAIT	TS201
Low	Burlington, CO	Lodging %	0.3%	0.4%	0.0%	0.4%
		NIS (0-3)	0.18	0.08	0	0.07
Moderate	Remsen, IA	Lodging %	58.9%		51.0%	38.8%
		NIS (0-3)	1.16		0.64	0.70
High	Boyden, IA	Lodging %	64.8%	53.7%	0.0%	29.4%
		NIS (0-3)	2.66	2.13	1.34	2.33

Source: 2020 INTENT FarmerTrials, all untreated checks and TS201 treatments have base fungicide and insecticide application; trait is a CRW trait selected by the grower as most suitable for their region, 1/4 acre strips.

Sample size, n=20; UTC = Untreated Check; NIS = Nodal Injury Scale (0 - 3) 0 = no root damage, 3 = highest possible root damage

TERRASYM 450 BIOSYMBIOTIC



Champions of Pink Performance™

IMPROVE NUTRIENT UPTAKE, ROOT DEVELOPMENT AND YIELD

NewLeaf Symbiotics' Terrasym 450 is a proprietary strain of PPFM (pink pigmented facultative methylophil) technology for use in corn that provides additional nutrition to plants during critical stages of development. When applied at planting, Terrasym 450 promotes nutrient uptake.

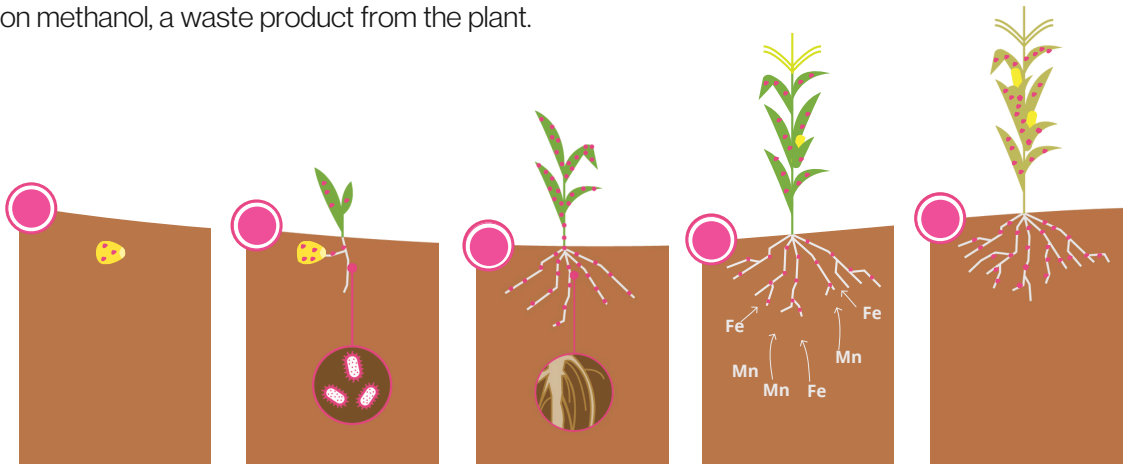
The mutually beneficial relationship between PPFMs and plants has co-evolved over time. Of the countless types of microbes that exist on plants, PPFMs are one of the few that have a truly positive symbiotic relationship with corn all season long. Unlike other microbial biostimulants, which feed on root exudate (a potential yield drag), Terrasym 450 feeds on methanol, a waste product from the plant.

71% WIN RATE

**+ 7.7 BU/A WIN
ADVANTAGE**

144 DATA POINTS

**3+ YEARS OF
TRIALS**



- As broad plant colonizers, PPFMs spread from the seed surface across a plant's roots and leaves.
- PPFMs secrete beneficial molecules into the root zone that can bind and transport yield-enabling micronutrients.
- PPFMs improve nutrient uptake by populating plant roots which promotes higher numbers of root tips and overall root mass.
- Prolonged PPFM colonization and increased nutrient uptake result in increased chlorophyll content and enhanced photosynthetic efficiency, both of which translate to increases in yield.

UNIQUE SEASON-LONG PERFORMANCE

Terrasym 450 for corn works all season long, providing added resistance to abiotic stress and improving plant performance. With many benefits, PPFMs are one of the few known microbes to have no known strains that impact plants negatively.



IMPROVE NUTRIENT UPTAKE AND STRENGTHEN THE PLANT

Terrasym 450 is a biological technology that colonizes plants with PPFMs that improve nutrient uptake, making your corn crop stronger, more stable up until the day it's harvested. The PPFMs in Terrasym 450 produce siderophores, which increase plant uptake of iron (+18%), manganese (+13%) and other important nutrients. Increased nutrient uptake leads to a bigger and more abundant root system, allowing the plant to maintain yield potential under abiotic stressed conditions.

TAILORED SPECIFICALLY FOR CORN

NewLeaf technologies are powered by a bio-informatics platform — Prescriptive Biologics Knowledgebase (PBK) — which provides the ability to uniquely select and align technology selection to a particular crop. Terrasym 450 for corn includes a uniquely selected PPFM developed to fit corn production and help deliver the best yield at harvest.



UNTREATED



TREATED